

Air Conditioning & Refrigeration News

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IN THIS ISSUE

'Required Reading,' Distributors Say
"Required reading" for their wholesale salesmen is what some distributors who have been in Detroit for conventions this past week tell us they are planning to make of the "Sell Through the Dealer" articles now appearing in the NEWS. This week's installment of the series authored by H. M. Butzloff tells what the wholesale salesman should know and do about the retailer's advertising efforts. Page 6.

Tabbing the Turnpike's Taverns

Howard Johnson's restaurants were written up recently in the Saturday Evening Post, and the Pennsylvania Turnpike has had lots of newspaper publicity. So the NEWS completes the story on page 7 of this issue by telling about the refrigeration equipment in the Howard Johnson restaurants on the turnpike. (And the scenery is swell too, we can testify personally.)

Choosing the Heat Exchangers

Seems like we've been dishing out a lot of information on heat exchangers recently, but it's a subject worthy of a lot of attention, when you get to looking into what it means to a commercial refrigeration system. Which is just what the article on page 10 does, plus giving some data on how to select the right size heat exchanger.

'Let's Set a Quota'

How do you, Mr. Dealer or Salesmanager, go about setting a sales quota for a given territory? Do you take the number of blocks and multiply by 10? And what do you do after you set the quota? Mr. A. Chance, dealer in Wilmington, Del., takes no chances—he sets his quotas scientifically. Read about it on page 2.

What and How of Radiant Heating

Radiant heating is something of a battleground in the winter phase of the air conditioning industry. It isn't in wide use yet, but a number of people are declaring it to be "the" method of heating. The first of a series of articles analyzing just what is known about radiant heating and what has been done with it thus far will be found on page 11.

Direct Expansion Freezer Data

The series on servicing counter-type ice cream freezers gets into some practical ground this week with a description of the hook-up for a remotely installed direct expansion system, with a table of control settings. Page 15.

Tops in Locker Plants?

You've seen and heard of some fancy locker plants, but there's one in Oklahoma City that will be hard to top anywhere. Pictures on page 14.

Westinghouse Sets Up Buffalo Distributing Co.

BUFFALO — Westinghouse Merchandising Distributors, Inc. has been established here as a factory-operated wholesale distributing concern, handling Westinghouse major appliances in western New York and northwestern Pennsylvania.

Formerly the Buffalo Electric Co. had acted as distributor for Westinghouse in the territory described. Buffalo Electric Co. will continue to wholesale Westinghouse small appliances.

Sales and display rooms and executive offices of the new distributing firm have been established at 81 W. Mohawk St. Stock will be carried in a warehouse.

The organization will exercise direct control over all retail dealers handling Westinghouse major appliances in the territory.

Universal Cooler Has Open House At Marion Plant

**Plant Air Conditioned;
New Production Layout
Cuts Handling 30%**

MARION, Ohio—Universal Cooler Corp. last week officially marked the completion of the move of its plant and offices from Detroit to this central Ohio city with an open house for visitors to inspect plant operations.

The former Susquehanna Silk Mills plant, covering some 2½ acres of ground, which Universal Cooler Corp. has taken over has undergone interior alterations and the plant layout has been arranged for straight-line production in a manner that reduces the handling of material approximately 30% as compared with the former layout in Detroit, says F. S. McNeal, president and general manager.

The plant has been sealed, so that only cleaned and treated air, introduced by an air conditioning system, will be circulated through the plant. The equipment is capable of changing the air every 10 minutes. The air conditioning system is a year-around job, with deep-well facilities on the plant grounds helping out with the summer cooling function.

Fifteen new precision machines are being added to the plant equipment moved from Detroit. Other improvements include a new power conveyor washer to wash parts before they are assembled.

The entire north end of the plant has been rebuilt into modern offices, with modernistic windows. This

(Concluded on Page 9, Column 2)

Los Angeles Jobbing Firms Effect Merger

LOS ANGELES—Merger of Frank Gillett Co. with Refrigeration Supplies Distributors as of Dec. 1 has been announced by Peter H. Askew, manager of the latter organization.

Entire stock of merchandise, fixtures, personnel, and phone of the Gillett organization has been transferred to Refrigeration Supplies Distributors headquarters at 222 Vermont Ave. here, and all future operations will be handled from this address, Mr. Askew reports.

Frank Gillett, manager, and Dexter Folsom, counterman, have joined the R.S.D. organization, and will continue to serve their customers among dealers and service men as in the past. All present personnel of Refrigeration Supplies Distributors also will continue on the job under the new arrangement.

Used Commercial Market Vanishing, Dealer Reports

PHILADELPHIA — Present-day commercial refrigerator equipment is so well made, so reasonably priced, and sold on such convenient terms that there is little market even in big metropolitan areas for used commercial refrigerator equipment.

That's the testimony of an expert, M. Schoebin, who runs the Romax Refrigerator Exchange in Philadelphia, which has specialized in buying and selling used commercial refrigeration equipment.

"What's more," declares Mr. Schoebin, "dealers for several lines, Frigidaire and General Electric in particular, seem to be adhering to a policy of junking nearly everything they take in trade, just to keep the stuff off the market."

In some cases the only way that Mr. Schoebin has been able to obtain

(Concluded on Page 4, Column 4)

Canada Bans Import Of Refrigerators Under War Act

OTTAWA, Ont., Can.—Importation of electric refrigerators, ranges, and other electrical household appliances into Canada from the United States and other non-sterling countries is banned under provisions of the so-called "War Exchange Conservation Act of 1940" recently given to Parliament.

Specifically, the import restrictions apply to refrigerators, domestic or commercial, stoves, electrical household appliances, radios, phonographs, musical instruments, wood and metal furniture, bathroom fittings, and other similar equipment.

Restrictions, however, do not apply to equipment which would be listed under the "machinery" classification, and so do not cover household or

(Concluded on Page 4, Column 4)

Batavia, N. Y. Dealer's 'Oil Strike' Winds Up A Distinct Liability

BATAVIA, N. Y.—John M. Secord, electrical appliance dealer here, thought for a few minutes he had "struck it rich" in the basement of his store, when he discovered a liquid seeping through the floor that had a definite petroleum odor.

Closer inspection, however, showed that the "strike" was in reality the result of a leak in the storage tanks of the service station next door.

Because of the fire hazard, police roped off the area while repairs were being made to the tanks—so that, instead of being a bonanza for Mr. Secord, his "oil strike" has been keeping customers away.

Jewett Introduces One-Model Line

BUFFALO — Jewett Refrigerator Co.'s one-model, three-compartment 8.8-cu. ft. capacity refrigerator is being continued for 1941 with only minor refinements in food storage arrangement and mechanical operation.

As in the past, the model incorporates three storage zones—a moist storage section above the regular

(Concluded on Page 4, Column 5)

Westinghouse To Introduce New Automatic Washer

MANSFIELD, Ohio—Westinghouse is ready to enter the automatic-cycle washer field in 1941 with a unit weighing less than 300 pounds and entirely free from vibration, according to reports of persons who claim to have seen the new machine.

The new model will be entirely self-contained, it is reported, and is housed in a cabinet about waist-high, designed to blend with other kitchen equipment.

Cycle of operation is controlled by two dials on the front of the machine, one regulating the mixing of water to the correct temperature for the kind of material being washed, and the other controlling the washing, rinsing, and spinning operations. Water is tempered before it goes into the washing compartment.

Washing, rinsing, and drying are done in a porcelain enamel steel perforated basket which holds 9 pounds of dry clothes and eliminates the agitator of conventional washers. After garments are put in the basket, which is sealed by a heat-resistant glass door, the controls are set and the rest of the operation is automatic.

Kelvinator Lowers Some Prices, Introduces All Glass Shelving

Dairy Industry To Have Exhibits at All-Industry Show

CHICAGO—Three new exhibitor companies from the dairy and ice cream industry, who in the past have limited their participation in trade shows to the Dairy Industries Exposition, have taken space in the Third All-Industry Refrigeration & Air Conditioning Exhibition, to be held Jan. 13-16 at the Stevens hotel here, reports M. W. Knight, general sales manager, Peerless of America, Inc., and chairman of the All-Industry Exhibition Committee.

All three exhibitors came in with the same story. According to them their customers and prospects in the great central dairy producing sections of the country have made it known that they are planning to attend the January show.

"Then too," observed Chairman Knight, "there's quite a trend on the part of manufacturers of ventilating equipment toward participation in the All-Industry Show this year. Fans, especially, are such an integral part of many adaptations to cooling where refrigeration is involved that this is emphasizing the importance of participation on the part of manufacturers of such products."

(Concluded on Page 4, Column 5)

Dealers Boost Sales Of 'Mobilaire' Units

By Henry Knowlton

SPRINGFIELD, Mass.—P. Y. Danley, the man in charge of air conditioning for Westinghouse, reports that sales of the company's Mobilaire room coolers have been vastly improved since they have been handled by merchandising distributors, including the Westinghouse Electric Supply Co. branches. These organizations sell to dealers throughout the country.

"There is no question about the fact that dealers can sell room coolers," Mr. Danley said, "and our dealers are selling them in volume."

The company's other air condition-

(Concluded on Page 16, Column 5)

Cooling Coils In Walls Give Better Control of Humidity & Temperature

By T. T. Quinn

DETROIT—Kelvinator dealers in 1941 will have an even better price story to tell than they had in 1940, Frank R. Pierce, general sales manager, told more than 500 distributors, wholesale salesmen, and factory branch men from all parts of the country at the opening session of the combined Kelvinator-Leonard sales convention Monday (Dec. 16) in the Masonic Temple here.

The convention is scheduled to wind up on Thursday afternoon, with the final two days of the meeting devoted to a school for wholesale salesmen.

In addition to lower prices for some models in the 1941 line, the Kelvinator field organization also was shown a new type of refrigerator incorporating the humidity principle, and permitting the storage of foods without covers to protect them from drying out.

The new type of refrigerator uses plate glass shelves throughout. It is said to be the first time that all-glass shelving ever has been used in an electric refrigerator. There are compartments for frozen meats, fish, poultry, and other frozen foods, a moist air compartment where high humidity is said to keep leafy vegetables, other highly perishable foods, and even flowers in a garden-fresh condition for long periods of time.

There are sleeves in which packaged ice cream can be stored, and in which frozen desserts can be made, in addition to the regular ice cube section.

Newsworthy from an engineering standpoint is the fact that the new refrigerator is cooled in a different manner than heretofore. In addition to the cooling coils that freeze ice (the only coils in conventional refrigerators), the new unit has a separate set of coils in the walls. This design, it is claimed, enables a greater control of temperature and humidity inside the unit, and makes possible the maintenance of different temperatures and humidities in various sections of the cabinet.

As in the 1940 line, 6 and 8-cu. ft. models will continue to dominate Kelvinator's electric refrigerator mer-

(Concluded on Page 4, Column 1)

Reuss To Distribute Complete Baker Line

PHILADELPHIA — Appointment of Edward H. Reuss, Jr., Inc., Philadelphia, as distributor for Baker air conditioning and refrigeration equipment in Philadelphia and the surrounding territory, has been announced by the Baker Ice Machine Co., Omaha, Neb.

Manager of the company's refrigeration division is A. J. Mallinckrodt, formerly with the Carrier Corp. and

(Concluded on Page 9, Column 1)

Missouri Sales Tax May Hit Air Conditioning

JEFFERSON CITY, Mo.—Air conditioning firms are affected by a recent ruling of the State Supreme Court which provides that a state sales tax may be imposed upon all materials purchased from out-of-state firms for use on jobs within the state, if the supplier firm has an agent in Missouri.

The ruling was cited specifically to apply to air conditioning and heating apparatus, fans, condensers, compressors, and filters, to the extent

(Concluded on Page 16, Column 5)

Wilmington Dealer Bases Quotas By Zones on 10-Year Average

Zones 'Closed' Only If Salesmen Make Monthly Quotas

By Robert M. Price

WILMINGTON, Del.—By basing salesmen's quotas on a 10-year sales average, and assigning each salesman to a zone having approximately the same number of users, A. Chance, manager of the refrigeration department of Wilmington Auto Sales, Frigidaire dealer here, has increased salesmen's earnings and passed this year's household refrigerator quota in August.

In setting up the zoned sales approach, Mr. Chance divided the cities into zones. Each zone had about the same number of users. The 10-year sales average was broken down by months, and the quota set up was equal to the 10-year monthly sales average in each zone. For instance, if the monthly average sales in Zone 1 was 10 sales over the period, that number was fixed as the quota for the corresponding month of 1940.

Every user in the zone was catalogued in a special report book, and commissions were not paid unless the salesman in the zone contacted 25% of these users in one month, and 100% in three months. This insured a maximum coverage of users, and a maximum number of paying leads from these users.

The zones were closed sales territory only if the salesman made his quota the preceding month. If he did not reach the set quota, the zone was declared "open" until the quota was made. Thus, if a sales-



A. CHANCE

man fell behind one month, he would have to sell that many more the next month to protect his zone. So effective was the plan that some salesmen closed their territory for the year period as early as May.

Salesmen were assigned zones in their own home sections of the city or to the zone in which they were best known, in most cases. However, if a salesman in Zone 1 ran onto a particularly hot lead in Zone 2—a close friend or relative, for instance—he was allowed to go into Zone 2 with the regular salesman for that zone in order to close the sale. In that case, a 3% commission was paid to the "closing salesman," and 7% went to the regular zone salesman.

In setting up the quotas, Mr. Chance "forgot the individual sales-

man and thought only of the territory." The 10-year average of installations were studied and enabled Mr. Chance to make a close estimate of what could be expected each month based on this average.

"We could almost judge how many sales each man would make in a certain territory before he started to work. Of course, we set up our own quotas and worked the 10-year average against this figure.

"The plan worked especially well with new salesmen. We could show them the exact number of refrigerators sold in a territory each month

Keeps Tab on Sales



Miss K. Wilson of Wilmington Auto Sales, keeps tab on salesmen's progress on the zoned sales chart.

for 10 years. We couldn't promise him a certain income, but we pointed out that if he kept up to average, he could realize a good return," Mr. Chance said.

The same zone plan was used in commercial refrigeration sales and in air conditioning. However, for this equipment the quotas were based on a dollar volume rather than on unit sales.

A careful system of records and reports was necessary to keep the plan active. Salesmen were required to report each call made on the users in his zone, and also to report the equipment in use. Prospects received from users were also reported carefully. The users and prospects were recorded "street by street" so that every possible lead was tracked down in the three months allowed the salesmen to cover the users in his zone. To keep the records up to date salesmen were required to file these reports at the sales office and to enter additional data to keep this permanent record up to date.

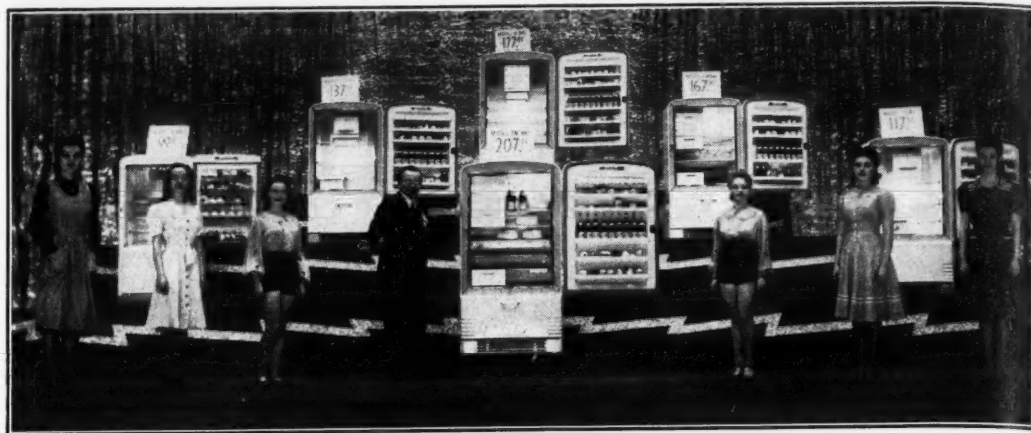
From these records was prepared a large "zone chart," showing the current record of each salesman. The vertical columns in this chart were filled in to "quota lines" in color. Any salesman could tell at a glance where he stood in regard to sales against quota, and could also tell if any zone was "open" due to another salesman failing to reach his quota.

While all the zone salesmen were on a commission basis, at the firm's showroom in downtown Wilmington a salaried sales supervisor was on hand to handle walk-in buyers. Zone salesmen were protected on these sales if the salesmen had previously contacted the prospects.

Commenting on the practical application of his "zone attack," Mr. Chance said:

"By breaking down our territory into zones, and making estimates of sales in the zones from the 10-year sales average, we were able to plan our year's selling program with a good degree of accuracy. By making it compulsory for salesmen to contact every one of our users we not only got leads from the users, but also got additional equipment sales from these users."

Crosley's 'Big Show' -- or Beautiful Girls With a Beautiful Line



When Wifey Is To Get the Sales Contest Prize, the Salesmen Really Bear Down

MEMPHIS, Tenn.—Ever have to explain to the wife how come you didn't bring home the "marbles" in a sales contest? Pretty tough, especially when friend wife stands to win something for herself. That's the situation appliance salesmen for Wallace-Johnston Co., General Electric dealer here, were faced with in a contest that made their wives the key figures in a drive to sell higher-priced appliances.

The entire promotion was aimed at the salesmen's wives. Prizes for the contest, which covered refrigerators priced above \$160 with no trade-in, ranges above \$140, and combinations of the entire appliance line, were expensive sets of aluminum ware, including cookers and deep fryers.

None of the salesmen was allowed to get any information on the contest except from their wives. At the opening of the contest, which had four mailing pieces, a "teaser" letter was sent to the wives inquiring whether they could use a list of 10 aluminum kitchen utensils, and instructing them to watch for further instructions.

The second letter listed each prize and its retail price, with a hint to the effect that the utensils could be received without cost. Next, one of the utensils was sent to each wife with the notation that her husband "would probably win it anyway."

Finally, a complete description of the contest was sent to each wife, a list of the prizes to be won, the method of winning them, and instructions to explain the whole thing thoroughly to her husband that evening.

For each of several qualified sales, the dealer paid \$1 toward the utensils, with a maximum of \$30 possible if the salesman sold one of each of five combinations. Daily

figures were sent each wife on her husband's progress throughout the four-week contest.

"With wives urging their husbands on and constantly reminding them of the opportunity to furnish the kitchen cabinet, we got the most rapid returns of any contest we ever used," said Lloyd Ramsey, sales manager of the firm.

Contests of this type brought in an extra \$11,000 worth of business last year in top-priced appliances, Mr. Ramsey reported.

Auto-Lec 'Holds' Goods of Married Draftees

NEW ORLEANS—Gearing its appliance promotion to the rush of marriages which followed passage of the military conscription act and increased industrial activity due to the defense program, the nine Auto-Lec Stores, Crosley dealers, are making a "get started" offer of refrigerator, range, and washer for a monthly payment of \$6.09 over a two and one-half year period.

A survey by H. V. Monninger, promotion manager of the dealer chain, showed that the market among newlyweds for appliance combinations had doubled during September, following passage of the draft bill. The special offer has been featured in a city-wide newspaper campaign, as well as in window displays at all stores.

As an extra-special inducement to young married couples, the offer provides that in the event the husband is drafted, the appliances may be returned to the company and held, without payments, during his year of military service.

Try this New, More Efficient CORK AND RUBBER INSULATION

• Looking for a more efficient cold line insulating material offering all the advantages of rubber and none of its disadvantages? Then you will want to investigate Miller's new cork and rubber combination. It is long lived; has excellent insulating qualities; can be made into any shape; possesses great flexibility; and does not absorb moisture.

Ask your local jobber for a sample of this new cork and rubber insulating material. If he cannot supply you, write direct to

MILLER RUBBER COMPANY, INC., AKRON, OHIO

Miller

"Engineers in Rubber"



MEET Virginia AT
BOOTH 126
3rd Annual All Industry Refrigeration and Air
Conditioning Exhibition, Chicago, Jan. 13 to 16, 1941



BUY YOUR
KINETIC'S
FREON-12*
VIA
VIRGINIA
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★ ★ ★ ★ ★

Quiet-Flo

ROLLATOR REFRIGERATION

for EVERY HOME

featuring

Distinctive Quality in Every Price Group

NORGE will soon announce the latest in a long list of "firsts" in refrigerator improvement which have originated in Norge laboratories. Many of these innovations have since been adopted by other manufacturers . . . the highest tribute the industry could pay to the progressiveness of Norge engineering. Other "firsts", protected by patents, are still exclusive to Norge. Some of the Norge "firsts" are:

1926 Original Rollator Compressor revolutionized electrical cold-making. "A roller rolls . . . and there's ice."

1930 First Plug-in Refrigerator. Norge was the first to present complete package merchandise in refrigeration.

1930 Cold Accelerator on Freezer . . . placed for the first time where it belonged, out of the way, yet convenient when adjustments are to be made.

1930 Rolled Edges on Food Compartment eliminated cracks and corners around the entire compartment opening . . . for sanitation and easy cleaning.

1931 Live Rubber Gaskets to seal food compartment door . . . assured positive sealing and eliminated unsightly strips.

1931 Completely Sealed Freezer. Since 1931, Norge has had a sealed ice chest, protected by patent . . . enclosed at the back as well as the sides and protected with a door that closes snugly on a live rubber gasket.

1932 Modern Beauty Styling. Ever since introducing modern styling in place of the old ice box type of construction, Norge has maintained its style leadership . . . again demonstrated by the new Hollywood Beauty cabinets.

1933 Easy Opening Door Latch. The Lazilatch, a Norge creation, reaches an entirely new high in easy opening and closing in the 1941 Norge.

1939 Permanently Sealed Rollator Cold-Maker . . . the original Rollator principle applied to a compact, sealed unit.

1939 Refrigerant Cooled Rollator Cold-Maker . . . the only domestic unit with the Motor-Cooler, a ring of flowing refrigerant which cools the unit to its most efficient operating temperature, regardless of how hot the weather.

1939 Handfroster brought a new simplicity to defrosting . . . a separate receptacle used only for defrosting.

1939 Coldpack, always usable for meat storage, with no defrosting duties to perform at any time.

1939 Cellaret Reserve Storage . . . a convenient compartment, with big shelf and door pocket . . . made possible by the simple, compact Rollator Cold-Maker.

1941 A Revolutionary New Development which accomplishes one of the greatest improvements that remained to be made in electrical refrigeration.

NORGE for '41

This brilliant new Rollator Refrigerator will soon be available through these Norge Distributors

ALBANY	ALBANY ELECTRIC CO., INC.	EL PASO	POPULAR DRY GOODS COMPANY, INC.	PHOENIX	BARROWS FURNITURE COMPANY
ALBANY	B. M. SPINNEY COMPANY	FARGO	San Antonio, Mead and Texas City	PITTSBURGH	ALBERT H. HANDEL & COMPANY
ATLANTA	HOPKINS ELECTRIC CO., INC.	GRAND RAPIDS	REINHARD BROS. CO., INC.	PORTLAND, ME.	THE TAPPAN BROS. COMPANY, INC.
BALTIMORE	111 S. Frederick St., B. O.	HONOLULU	RADIO DISTRIBUTING COMPANY	PORTLAND, ORE.	F. A. CONNELL COMPANY
BIRMINGHAM	SOUTHERN WHITE-CHALICE, INC.	INDIANAPOLIS	235 N. 3rd St., B. O.	REHOBOTH	WILLIAM T. CRANE COMPANY, INC.
BOSTON	202 N. 1st St., B. O.	JACKSONVILLE	THE GIBSON COMPANY	ROANOK	THOMAS & BROS. CO., INC.
BUFFALO	121 E. 1st St., B. O.	KANSAS CITY	CALN & SULTMAN, INC.	ROCKFORD	ROCKFORD MEAT CO., INC.
BILINGS	NORGE SALES CORPORATION	LITTLE ROCK	314 W. Adams St.	SALT LAKE CITY	THE SALT LAKE HARDWARE CO.
BIRMINGHAM	121 E. 1st St., B. O.	LOS ANGELES	MAYFLOWER BROS. COMPANY	ST. LOUIS	MEYER'S SALES COMPANY, INC.
BIRMINGHAM	121 E. 1st St., B. O.	LOUISVILLE	250 Grand Ave.	SAN ANTONIO	NORGE FURNITURE SALES CO.
CHARLOTTE	MIDLAND IMPLEMENT COMPANY, INC.	MEMPHIS	WHOLESALE APPLIANCE, INC.	SAN FRANCISCO	LEO J. MEYER COMPANY
CHICAGO	121 E. 1st St., B. O.	MIAMI	201 E. 1st St.	SEATTLE	F. E. CONNELL COMPANY
CINCINNATI	THE SALT LAKE HARDWARE COMPANY	MILWAUKEE	237 S. 1st St.	SPRINGFIELD	W. J. WOODWARD & SONS
CLEVELAND	CHARLESTON ELECTRICAL SUPPLY CO., INC.	MINNEAPOLIS	THE MURPHY COMPANY, INC.	SPRINGFIELD, MASS.	B. H. SPINNEY COMPANY
COLUMBUS	111 S. Frederick St., B. O.	SAFVILL	215 E. 1st St.	SPRINGFIELD, MO.	TURNER DEPARTMENT STORE CO.
DALLAS	CLERSON BROTHERS COMPANY	NEW ORLEANS	LYLE CHESTERMAN, INC.	STRAZBURG	S. H. SPINNEY COMPANY
DENVER	215 E. 1st St., B. O.	NEW YORK	121 E. 1st St.	TOLEDO	V. I. M. GRANAHAN DISTRIBUTING CO.
DETROIT	SAMPSON ELECTRIC COMPANY	OKLAHOMA CITY	NORGE PRODUCTS COMPANY, INC.	WASHINGTON	SOUTHERN HARDWARE, INC.
EL PASO	215 E. 1st St., B. O.	OKLAHOMA CITY	215 E. 1st St.	WICHITA	MAYFLOWER SALES COMPANY
		PHILADELPHIA	215 E. 1st St.		

IN CANADA: CANADIAN RADIO CORP., LTD., TORONTO 1, CANADA

In addition to well-balanced domestic distribution, Norge products have made acceptance abroad through 159 Distributors in 24 foreign lands.

NORGE DIVISION BORG-WARNER CORPORATION, DETROIT, MICHIGAN

SEE NORGE BEFORE YOU BUY

NORGE ROLLATOR REFRIGERATION • GAS AND ELECTRIC RANGES • WASHERS • HOME HEATERS • COMMERCIAL REFRIGERATION

1941 Kelvinator Line To Have Increased Storage Space; 'Step-Up' Plan Expanded

(Concluded from Page 1, Column 5) chandising for 1941. New design features, however, have made possible an increase in storage space, so that the 1941 sixes will have capacities of 6½ cu. ft., while the eights will have capacities of 8½ cu. ft.

In presenting the new 1941 models to the field organization, Mr. Pierce declared that, following up its 1940 program, Kelvinator next year would go even further in answering such dealer problems as too many models, unfavorable pricing policies, inadequate "step-up" plans, too many dealers, and unconvincing trade-in stories.

Kelvinator in 1940 was the first manufacturer to look the problems of the long-forgotten retailer squarely in the face, Mr. Pierce said.

"Those who built the refrigeration business—the dealers—had been waiting for years for some manufacturer to have the courage to give them a program that would eliminate the evils that existed in the industry," he declared. "Kelvinator dealers proved the soundness of our program by more than doubling their business, and by boosting Kelvinator sales to a new all-time high."

George W. Mason, Kelvinator president, told distributors that 1941 refrigerator business should surpass even the all-time industry records established this year. With the national defense program just getting under way, next year should see a great deal of the present "on order"

business actually getting into production, he declared, with the accompanying increase in employment furnishing a decided boost in purchasing power.

Kelvinator national magazine advertising next year will appear in publications reaching more than 15 million persons, C. J. Coward, director of advertising and sales promotion, told distributors at the Monday afternoon session. Magazines to be used include Saturday Evening Post, Life, Collier's, Liberty, True Story, and Household.

Sales training materials next year will be recorded, Mr. Coward announced, so that salesmen will be able to "play back" records covering parts of the presentation on which they need refreshing, and so that they can be trained in accordance with individual abilities. Training records will be kept by individual dealers, so that new salesmen can be trained without the necessity of special classes.

Recordings also will be made of radio spot announcements, which next year will feature a musical theme, Mr. Coward said.

Dealership Changes Hands

CANNON FALLS, Minn.—Clement Grignon, formerly of Marshfield, Wis., has purchased the Newt & Lyle appliance business here and is operating it as Clem's Appliance Co.

Kelvinator distributors, who set a new sales record for the company last year, eagerly applauded the opening of the company's annual distributor's sales convention Monday, Dec. 16 in the Masonic Temple, Detroit. They lean forward in their seats to catch every word of new product, price, and sales policies which the executives of the company will make known to them in the fast-moving conventions which are the style of the industry.



Farnsworth Sales Up

FORT WAYNE, Ind.—Farnsworth Television & Radio Corp. reports total sales in the first half of the company's fiscal year, which ended Oct. 31, of \$2,234,783, an increase of \$1,023,563, or more than 84%, over the corresponding period last year. Unfilled orders total more than \$2,500,000, an increase of 300%.

Canada's War Act Bars Refrigerator Imports

(Concluded from Page 1, Column 3) commercial condensing units shipped separately, it was reported.

Import restrictions announced are effective as of Dec. 2, but will not apply to "any goods which on or before Dec. 2, 1940, were in transit to Canada." Entries of such goods will be permitted up to Feb. 28, 1941, it was reported, upon proof that the orders were placed before Dec. 2 of this year. Tariff changes apply to goods taken out of warehouses for consumption on or after Dec. 2, and to goods previously imported, but for which no entry for consumption was made before that date.

In addition to total restrictions on the items given above, import licenses also have been set up for certain other products, none of which include electrical appliances, the idea being to reach total prohibition gradually when manufacturers may be able to use other materials.

Total import and licenses import prohibitions are mainly for the purpose of conserving United States exchange for purchases of essential war materials. Canada's purchases of war materials will more than offset the aggregate of prohibitions, J. L. Isley, minister of finance, pointed out.

The war budget act also adds to the domestic excise taxes, for the purpose of reducing spending for luxury goods and to release labor for war industries. New tax is 25% on the manufacturer's price of radios, radio tubes, phonographs, electric or gas ranges, and refrigerators.

Used Commercial Market Hits Sharp Downgrade

(Concluded from Page 1, Column 2) merchandise is to offer a higher price than the allowance that the dealer was offering on a trade-in.

When Mr. Schoebin sells such used fixtures or machines, it is only to markets or lunchrooms whose income or financial situation is so low that they just can't swing new equipment, no matter how reasonable the terms.

The only kind of used condensing units in which Mr. Schoebin deals are Frigidaire machines. There are two reasons for this, he points out: (1) by concentrating on one unit, it is easier to collect a supply of parts and to rebuild the unit in the best manner possible; (2) Frigidaire parts are quickly obtainable from a number of sources.

Jewett Will Continue One-Model Line In '41

(Concluded from Page 1, Column 3) compartment, reached through a separate door, and designed for storage of fruits and vegetables requiring extra humidity for freshness. This section maintains a temperature of 45° F., with 70% humidity, it is claimed.

Cold storage compartment, in which a temperature of 15° is maintained, stretches across the top of the regular storage section, and has a capacity of 1 cu. ft. for storage of frozen foods, making of ice cubes, and storage of meats. Main storage compartment maintains a temperature of 40°, and has a sliding sorting tray, sliding shelf, sliding baskets for packaged foods, and a "Bevwell" at the cabinet bottom, for storage of milk and other beverages.

The refrigerator is operated by a ½-hp. hermetically sealed condensing unit, installed in the cut out section in the rear of the cabinet bottom. "Freon" is the refrigerant. Exterior finish of the unit is Dulux, with heavy hardware and stainless steel trim.

Dairy Equipment Firms In All-Industry Show

(Concluded from Page 1, Column 4) ucts."

Wide use was made last week by the newspapers of the country of a press release by Chairman Knight, under such headlines as "Army Is Flouting Tradition; Its Menu to Be 'Debeaned.'" The story read:

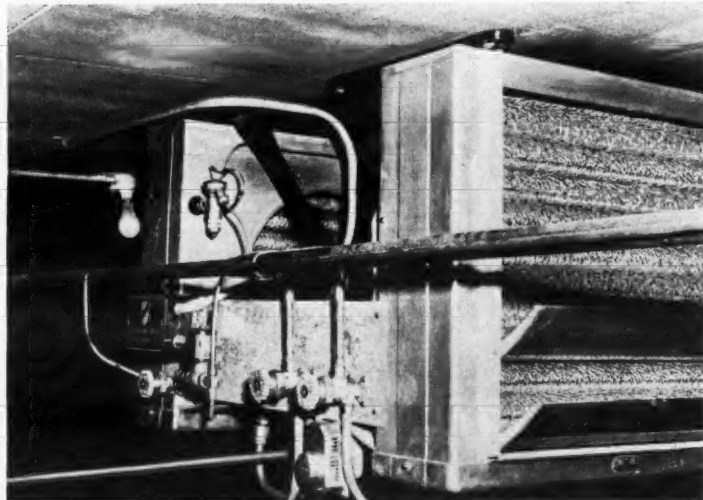
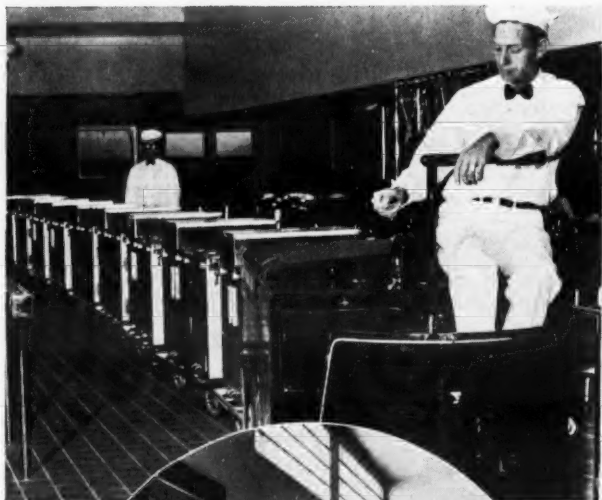
"Beans and cured meats ad infinitum as the constant American Army diet are destined to be items that veterans only can mention first hand, if Army purchases of mechanical refrigeration is any sign."

"The Army already has spent several million dollars for refrigerating equipment for cantonments and it is known that hosts of quartermasters are planning inspection trips between Jan. 13 and 16 at the Third All-Industry Refrigeration & Air Conditioning Exhibition at the Stevens hotel."

"Mechanical refrigeration is causing Army diets to undergo revolutionary changes," said Mr. Knight. "Meals are being planned now around fresh meats, vegetables, and fruits."

"Mechanical produce coolers, each capable of handling fresh food supplies for 18,000 men, are now being installed in 57 cantonments throughout the country."

MEALS BY THE TRAINLOAD FROM PEERLESS-EQUIPPED MECHANIZED KITCHEN



Left: Trainload of dimmers ready for delivery to hospital dormitories. Right: One of Peerless Unit Coolers installed in Colorado State Hospital.



Food supply for 5000 people protected by nineteen PEERLESS UNIT COOLERS

Peerless again steps into the limelight... plays a leading role in the functioning of an utterly modern, startling idea in mass meal production! At the new two-million dollar Colorado State Hospital for mental cases, the law prohibited the housing of more than 100 patients in a building. The problem of economically feeding 5000 people living in widely separated dormitories was met by installing a central Mechanized Kitchen with a novel food distributing system.

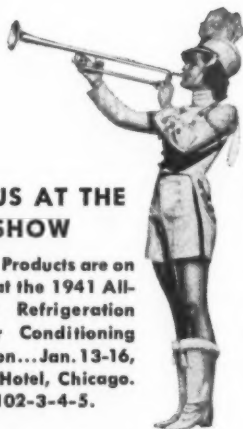
Breakfast, luncheon and dinner are delivered by stainless steel cars, drawn through a tunnel to dormitory cafeterias, where the cars become an integral part of serving counters. Meats, fruits, vegetables and dairy products are stored in huge walk-in refrigerators equipped with Peerless Unit Coolers!

Champions of their class

In Peerless Unit Coolers you have a forced air coil produced at low cost—not by sacrificing quality, but by engineering development! Superbly styled... super-efficient because of Thermek heat transfer surface... supported by refinements of design and material in every detail. This is the Cooler which really delivers "More Refrigeration per Dollar!"

SEE US AT THE SHOW

Peerless Products are on Parade at the 1941 All-Industry Refrigeration and Air Conditioning Exposition... Jan. 13-16, Stevens Hotel, Chicago. Booths 102-3-4-5.



Peerless of America Inc.

Midwest Factory, General Offices—515 W. 35th Street, Chicago

NEW YORK FACTORY
43-20 34th Street
Long Island City

PACIFIC COAST FACTORY
3000 South Main St.
Los Angeles, Calif.

SOUTHWEST FACTORY
2218 N. Harwood St.
Dallas, Texas

EXPORT DIVISION
P. O. Box 636
Detroit, Mich.

UNIFORMITY

You get it in WOLVERINE TUBING

—Buy From Your Jobber—

WOLVERINE TUBE CO. DETROIT

Distributor-Dealer Doings

Dialect Detective on Air For Rex Cole



Harold C. Caspers, sales manager of Rex Cole and Robert Stevenson, vice president of Rex Cole, are shown on the stage at the WOR Playhouse as they greet talent on the radio program "Where Are You From?" sponsored by Rex Cole, Inc., distributor of General Electric refrigerators and appliances. On the extreme left is Allen Kent, master of ceremonies. On the right, Dr. Henry Lee Smith of Brown university, voice detective, who guesses where you are from by your dialect. The program is heard Wednesdays from 8:00 to 8:30 p.m. over WOR and Mutual network.

Mayflower Sales Buys Armcast Norge Co.

KANSAS CITY, Mo.—Armcast Norge Co., appliance distributorship with offices here and in Wichita, Kan., has been purchased by Mayflower Sales Co., St. Louis Norge distributor. The move gives the Mayflower coverage of all of Missouri and Kansas, in addition to southern Illinois.

Mayflower will operate out of the former Armcast headquarters at 2600 Grand Ave. here in serving the western Missouri and eastern Kansas area, with George Likens as manager of the local unit. The Wichita office will cover the rest of the Kansas territory. St. Louis headquarters serve eastern Missouri and southern Illinois.

M. B. Lasky, vice president, and E. J. Straus, general sales manager, arranged the establishment of the two new Mayflower offices.

Standard Sales Co. Moves Spokane Quarters

SPOKANE, Wash.—The Standard Sales Co., Crosley distributor in the "Inland Empire," has moved into new headquarters at 1219 West First Ave., said to be among the finest in this section.

In addition to modern display rooms, a service department has been installed for the convenience of both dealers and users.

The opening was announced in full-page advertisements in Spokane papers.

Norge Service, Baltimore Firm, Moves Offices

BALTIMORE—Norge Service, engaged exclusively in the servicing of all Norge appliances (with the exception of oil burners) distributed in this area, has moved from 2028 Frederick Ave. to quarters at least 10 times as large at 202 S. Pulaski St., in the same building which houses Norge distributing activities.

A complete stock of Norge parts will be carried in order to effect more rapid and efficient service than has ever before been attempted in the Baltimore territory.

Manager of Norge Service here is Charles Prescott, who has been identified with Norge service activities for many years. He is assisted by John Taylor.

C. Hoffberger Co., the firm which distributes Norge oil burners, also provides service for this item.

All other Norge appliances are distributed in this territory by Southern Wholesalers, Inc., which is headed by William E. O'Connor. Arthur J. McGettrick is manager of this company's Baltimore division.

'Where Are You From?' On Air For Rex Cole

NEW YORK CITY—New General Electric coffee-makers are being awarded as prizes in the dialect guessing contest on the radio program, "Where Are You From?" heard from 8 to 8:30 p.m. Wednesdays over WOR and the Mutual network.

The program, which features Dr. Henry Lee Smith of Brown university, "voice detective," who guesses where you are from by your dialect, is sponsored in this territory by Rex Cole, Inc., G-E distributor. Commercials at present are plugging the special offers in G-E refrigerators for the holiday season.

Strangers attending the broadcast are invited to the microphone, and after a short interview, Dr. Smith tells them what section of the country they come from. A "mystery guest" is introduced on each program, and reads a jingle. The network audience is then invited to guess where the mystery guest is from. For the five best answers, and reasons why, an automatic coffee-maker is awarded through the nearest dealer.

An additional prize is offered each week for the best 125-word jingle submitted, including such test words as Merry, Mary, Marry, Greasy, Water in Washington, About the House, On the Dog and County Fair, etc. Among prizes awarded for the best jingle is the new G-E combination vacuum cleaner, with radios, clocks, and toasters scheduled as awards on later programs.

Barwick Buys Stock Of McArthur Bros.

CLINTON, N. C.—Hugh B. Barwick has purchased the stock of McArthur Bros., electrical appliance dealership here. Mr. Barwick will continue to operate the business at the same location and under the same charter and name.

Mr. Barwick was a Carolina Power & Light Co. employee for 13 years, having spent the last five years as a member of the sales department in the Clinton district.

No change is contemplated in the personnel of the firm, it has been announced. Miss Mary O. Jackson will continue her duties in the office, O. D. Smith will carry on as sales representative, and Charlie Powell will remain in charge of the radio sales and service department.

Connors Buys Firm In Edgerton, Wis.

EDGERTON, Wis.—John Connors, formerly of Beloit, Wis., has purchased the General Electric Appliance store here from L. W. Barnes.

Who's Who Where

Reinhard Promotes LaClare

MINNEAPOLIS — Lawrence V. LaClare, associated with Reinhard Brothers, local household and automotive supply distributors for 17 years, has been named sales supervisor of Norge appliances.

Kissner Leaves Warren-Norge

NEW YORK CITY—Art Kissner, for the past five years manager of the dealer division of Warren-Norge Co., distributor of Norge appliances and Farnsworth radios in the New York metropolitan area, has resigned. No successor has as yet been named, and Mr. Kissner has not announced his future plans.

Simon Promotes Harris

BALTIMORE—A. E. Harris, for seven years a member of the sales staff of Simon Distributing Co., Hotpoint distributor with branches here and in Washington, D. C., has been named assistant sales manager of the company.

Fawcett Is Promoted

EAST PITTSBURGH, Pa.—Appointment of M. L. Fawcett as staff assistant was announced recently by T. I. Phillips, general works manager of Westinghouse Electric & Mfg. Co. Mr. Fawcett has been manager of the transformer division at Sharon, Pa. since 1935.

In Smoky City



P. K. Abry, manager of Frigid-Aire's new branch in Pittsburgh. He formerly was manager of Kansas City district office.

Dallas Home Economist

DALLAS, Tex.—Miss Audrey Lynch has been appointed home economist for the Dallas branch of Stewart-Warner Corp.

Takes Sherman Case Line

TOPEKA, Kan.—Capital Electric Co. has been appointed sales agent for the Charles Q. Sherman line of frozen food display cases.

F-M Dealers In Louisiana

NEW ORLEANS—Two new dealerships for Fairbanks-Morse air conditioning and engineering products have recently been appointed by territory offices here. They are Allied Sales & Supply Co., Jackson, Miss., and the Left Engineering Co., Mobile, Ala.

New Firm In El Centro, Cal.

EL CENTRO, Calif.—Shelburne Refrigeration Co. is the firm name under which R. A. Shelburne has obtained a certificate to conduct an electrical appliance and refrigeration business at 1247 Main St. here.

Hartman With Roos

DALLAS, Tex.—K. Hartman, veteran Dallas electrical appliance salesman, is now with Roos Electric Co. in the Highland Park shopping village.

Bundy's Agency Named

DETROIT—Bundy Tubing Co. has appointed Brooke, Smith, French & Dorrance of Detroit as its advertising agency.

Proctor-Flanagan Move

SPRINGFIELD, Mass.—Proctor-Flanagan, Inc., in the electrical appliance business less than a year, has moved from its original location on State St. to a larger store at 1212 Main St. Norge and Crosley refrigerators are included in the wide variety of appliances handled by the company.

Santa Claus comes Twice a year

DECEMBER

PROFIT DIVIDEND
for Mr. John Doe
M.C. Brown

MARCH

PROFIT DIVIDEND
for Mr. John Doe
M.C. Brown

Thousands of dealers profited by the DOUBLE DIVIDEND feature of the

Get away to a flying start for 1941. Thousands of dealers wound up this year with a substantial accumulated dividend on appliance business as a result of financing time payment sales on the PROFIT PROTECTION RESERVE PLAN.

Santa Claus brought them a whacking Christmas dividend of PROFITS saved by this sound plan . . . profits saved because the plan protected them against losses and re-imbursed them for special expenses incident to installment selling. It left them their full profit on the merchandise sold on time. There'll be other dividends. If you want to declare in on them, act now. The quicker you qualify, the surer you'll be of enjoying the fullest benefit. Thousands of dealers switched this year to the PROFIT PROTECTION RESERVE PLAN. It paid them. It will pay you, too.

It's as simple as ABC. It's sound. It is liberal and attractive to your customers. Let us tell you about it. Just send us the coupon below, to say you're interested, and we'll send you the story.

COMMERCIAL CREDIT CORPORATION

IF YOU WANT:
MORE Sales MORE Profit
MORE Protection for Profit
Special Accumulated
DIVIDENDS

**PROFIT PROTECTION
RESERVE PLAN
for
TIME PAYMENT SELLING**

Paste this on back of penny post-card OR enclose in envelope

COMMERCIAL CREDIT CORPORATION, Baltimore, Md.

Send me full information.

Name _____

Address _____

City & State _____

**MAIL
Today**

'Mechanical Book' Window Display Tells Complete Story on Electric Range



PITTSBURGH—A mechanical book window display telling a complete electric range story to prospects is being displayed in store windows of West Penn Power Co. throughout this utility's territory. The promotion display was designed by the Westinghouse Electric Supply Co. of Pittsburgh and is being used as a tie-in with Westinghouse dealers in the area.

The display was in the form of a large double-page book, the pages turning so that the pages could be read as a running story on the features of the electric range. The window was completed with an electric range, and fall leaves gave the display a fall motif.

Dealers were asked to tie in with the utility's display by putting in

their own window displays featuring the Westinghouse "Chieftain" range. Each dealer was also asked to run a minimum of 24 inches per week of newspaper advertising with a trailer advertisement calling attention to the mechanical book display in the utility's window.

Dealers were to buy and mail a quantity of promotion folders on ranges which were furnished at 50% of the regular cost. The mailings were to be directed to a list supplied by the utility.

In addition, each dealer was to sponsor a cooking school to be held in the dealer's store during the two weeks that the mechanical book was displayed. The cooking school was to be conducted by a home economist furnished by West Penn Power Co.

Selling 'Through the Dealer' Rather Than 'To the Dealer'

The Function of the Wholesale Salesman

H. M. Butzloff, author of this series of articles, is central sales manager for Norge. Before that he had many years of experience in the field distribution end of the household electric refrigeration business, with Westinghouse, and with the old Stover Co., original Frigidaire distributor in the Chicago area.



As the new lines of refrigerators are about to be introduced, AIR CONDITIONING & REFRIGERATION NEWS believes that this series of articles, which tell how a wholesale salesman can do a better job, is particularly timely. This is the third in the series.

By H. M. Butzloff

Selling Ideas, Not Merchandise

ADVERTISING

To sell anything in volume you must not only have good products, you must attract attention to and create interest in the products you have to sell.

In no department of a dealer's business is the wise counsel of the wholesale salesman more important than guidance in spending the dealer's money for advertising.

A simple example shows what effect poor planning and execution can have on your advertising dollar.

Case	Local Advertising Per Unit of Sales Quota	Comparative Sales % of Quota	Cost of Advertising per Actual Sale
"A"	\$2.95	271%	\$1.08
"B"	2.62	139%	1.88
"C"	1.35	43%	3.18

In all cases poor planning is reflected. In the first instance we will say that the dealer planned on spending about \$3.00 per refrigerator for advertising. It brought returns with 271% of quota and he experienced a low cost per unit on actual sales made. But this result may be criticized because had the advertising budget been correspondingly increased to correspond to the sales still greater sales volume might have been produced.

In the case of "C" the penny-pinching type of advertising budget actually resulted in a greater cost per actual sale than good business might warrant.

Not only is the amount appropriated important, but the way it is expended.

- (1) The selection of media to cover your markets.
- (2) The apportionment of budget to each medium.
- (3) Preparing of copy to be most effective in each particular market.
- (4) The size and location of the space to command attention and readership.
- (5) Display advertisements.

The selection of media to cover your markets requires careful thought. Will the big metropolitan dailies do your work? Is the cost per reader too high? How do the neighborhood dailies fit into the picture, if at all?

Can the movies through slides or movie shorts be used more effectively for the money to be expended? Can satisfactory coverage be obtained by a billboard?

The apportionment of the funds that should go into each type of advertising depends on which medium reaches the greater number of people at the lowest per unit cost and does it most effectively. This will have to be determined by careful study.

The type of copy, whether factory or local, punchy sales copy or testimonial, strong competitive or good background copy are some of the problems that must be studied and decided upon.

The dealer might have to decide upon large space if a competitor is constantly using large space. On the other hand it might be wise to use smaller advertisements which would offer continuity and constant repetition over a longer period than

be no time at all until he has a producing dealer.

A concrete example of this kind of promotion comes to mind. In a midwestern city a wholesale salesman for Company "A" had developed a dealer to 125 refrigerators a year. Another Company "B" was able to wean him away from competitor "A."

Things went along all right for a while. Then this dealer's business started to drop off, and in the course of two years the business had fallen off until it was necessary for "B" to get another outlet.

What happened to Competitor "A" in the meantime is the remarkable thing, and again points to a progressive wholesale salesman. He took a relatively unknown dealer and with constant contact and development brought this dealer up within one year to a point where the new dealer's volume was greater than the former dealer's.

What did it? Not the product alone, but the man who was doing the development work.

An apple a day "may" keep the doctor away, but it is a well-known fact that an idea every time you call on a dealer will keep that dealer steamed up and producing. When your ideas get into a rut and your enthusiasm for them starts to wane, you can then begin to see your business go down hill.

It is not necessary to have a brilliant brainstorm in order to develop an idea which will bring in business for the dealer. The reemployment of ideas which have been successful for other dealers will be welcomed by progressive dealers.

While the major portion of the ideas you must develop are ones which will bring in prospects and build store traffic, yet there are others which stimulate selling on the floor as well as closing of prospects. For instance,

1. An attractive background for the product.
2. A well designed set of feature cards high lighting the product.
3. A proof story showing dramatically the cost of operation by simply attaching meters to a refrigerator in operation.
4. Dramatic cut-away equipment enhances the selling tools.
5. A meter plan of selling.
6. A bank clock plan.
7. A warehouse sale.
8. A used equipment department.
9. A plan for development of specific prospects such as farmers, professional men, hospitals, etc.
10. A low-use campaign for utilities.

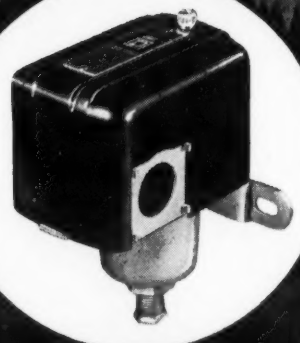
These are all fundamental suggestions which can be arranged and rearranged for an individual dealer's use. They must be combined with the right suggestions for newspaper advertising, outdoor billboards, handbills, window and floor display, movie shorts, selling literature, and dramatic selling helps.

SQUARE D IN REFRIGERATION

New HIGH PRESSURE CUT OUT... CLASS 9144

Dependable protection against over-pressure where low side control is manual and a simple, single unit, high pressure cutout is required—types for FREON, METHYL AND AMMONIA.

DO IT ALL WITH SQUARE D SWITCH • PROTECT • REGULATE



SQUARE D COMPANY
REGULATOR DIVISION
DETROIT • MICHIGAN

PROFITS IN THE AIR!

THOSE NEW 2½ AND 5-GALLON FREEZERS ARE NATURALS!

AND JUST LOOK AT THOSE CABINETS

CAN'T BEAT THE FREEZETTE AS A PACKAGE ITEM! CABINETS FOR IT, TOO!

There'll be excitement aplenty in Booths 9 and 10 at the Show when Tuthill presents its brilliant new 1941 line-up of counter-type ice cream freezers and auxiliary cabinets—all in addition to the popular self-contained automatic Freezette. You'll find all the equipment your customers require to cash in on the demand for frosted malteds, ice creams, sherbets, ices and the new frosted fruit drinks. Here's your chance to get in on the ground floor of profits now in the making.

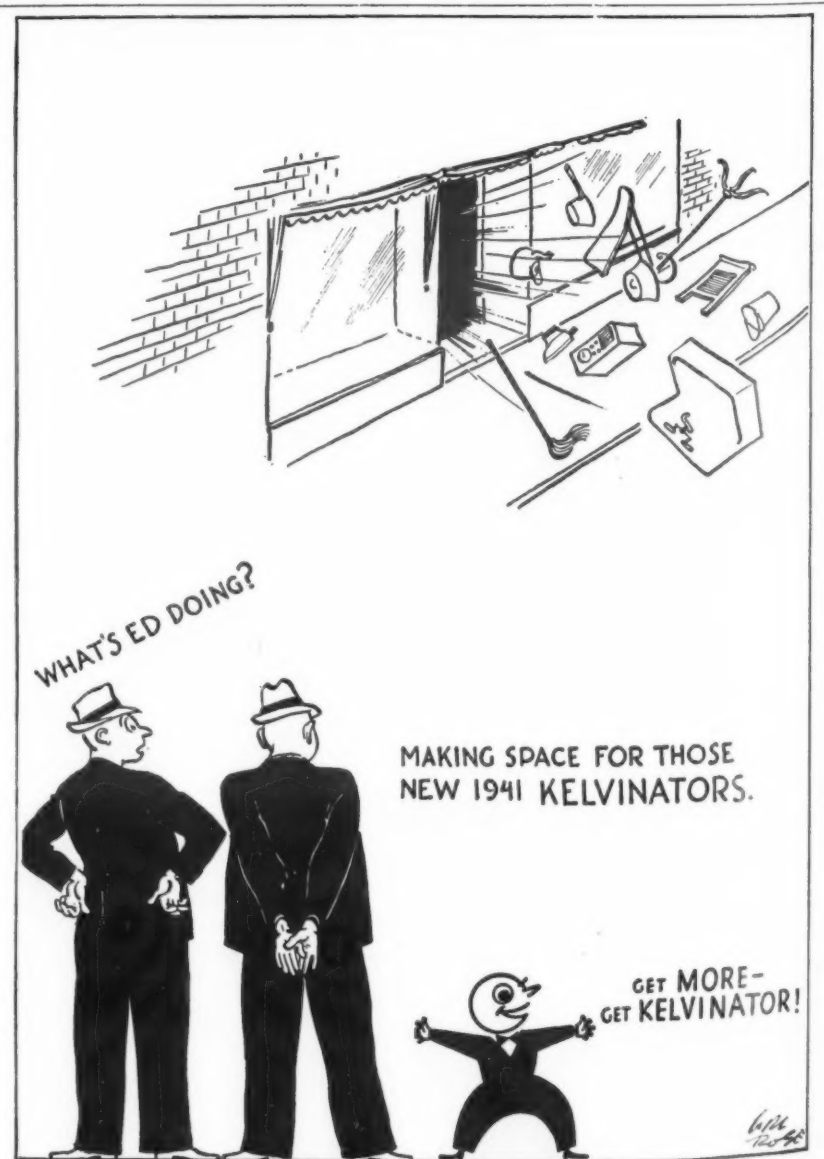
Write for exclusive franchise facts!

Refrigeration Products Division
TUTHILL PUMP COMPANY
935 East 95th Street Chicago, Illinois

BOY—WHAT A PROFIT LINE FOR ANY DISTRIBUTOR!



Distributors — DON'T MISS THIS BIG PREVIEW IN BOOTHS 9 AND 10

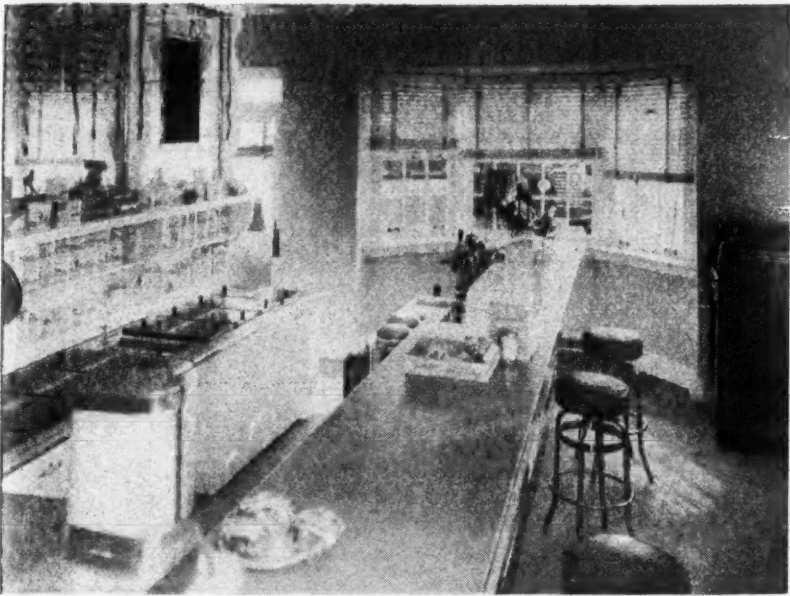


WHAT'S ED DOING?

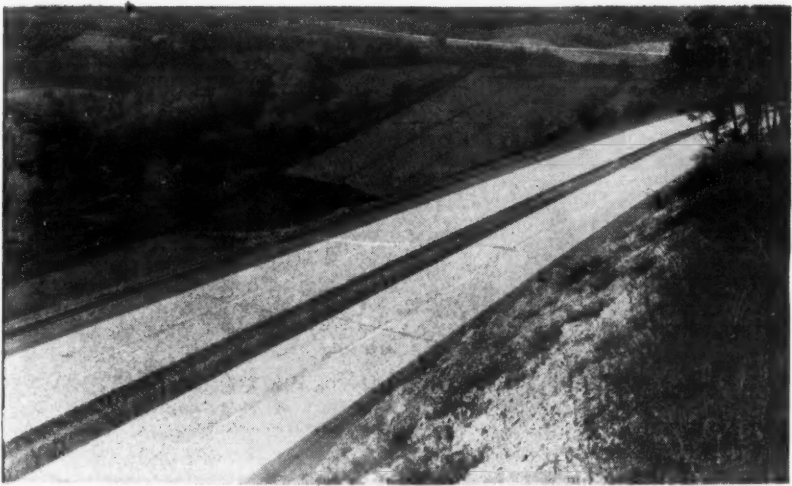
MAKING SPACE FOR THOSE NEW 1941 KELVINATORS.

GET MORE—GET KELVINATOR!

Pennsylvania Turnpike's Food Stops Have Modern Refrigeration Facilities



Interior of one of the eight smaller food serving units on the Pennsylvania Turnpike. One large unit is situated at the midway point on the highway. In the smaller intermediate stations, counter service includes lighter lunches and "snacks" for motorists who are in a hurry. All food is kept under modern conditions in refrigeration units cooled by Frigidaire heavy-duty compressors.



A hilltop, panoramic view of a section of Pennsylvania's modern, recently opened, four-lane turnpike looks like this. Connecting Irwin and Carlisle, Pa., the 160 mile highway eliminates the usual difficulties and hazards of mountain driving. There are no sharp turns or steep grades, and the road includes seven tunnels which average about one mile each in length. Because of the turnpike's design, high speeds are possible.

PITTSBURGH—Electric refrigeration is playing a major part in the success of the food establishments and automobile service stations that cater to those traveling the new Pennsylvania Turnpike. Recently opened, this new super-highway extends for a distance of 160 miles from Irwin, Pa. on the west, and to Carlisle on the east. Patronage has developed to such a volume that the main restaurant, known as "Midway Station," may soon be enlarged to double its present capacity.

The highway traverses its sweeping course through the Alleghenies, cutting through seven mountains by means of tunnels drilled and blasted out of solid rock, winding in easy curves and grades between mountains and through precipitous rocky cuts.

Along the turnpike are the "Midway Station" and eight smaller intermediate units, food service in each of which is under the management of Howard Johnson's, which has subleased its restaurant space from Standard Oil Co. of Pennsylvania, general lessee of services at all nine points.

Each of the stations is a self-contained unit from the standpoint of electrical equipment. This equipment includes a water pump for supplying well water to the kitchen, lunch room, and rest rooms; complete electric refrigeration installations; motors for operation of gasoline pumps, electric lighting systems, radio, and other uses.

At the large "Midway Station," operating headquarters for the string, Frigidaire heavy-duty compressors are used to refrigerate quantities of food kept in storage. One storage locker, for example, is required for keeping a maximum of 290 cans of ice cream, for use at the "Midway

Station" and for distribution to each of the eight other units. Deliveries are made by the commissary department which maintains a regular schedule over the route. Another locker at "Midway Station" is used for storage of fountain syrups and similar items, while still a third locker is utilized for storage of meats and vegetables. All of these storage chambers are in the basement.

Additional refrigeration equipment also is in use in the serving kitchen on the ground floor, adjacent to the main dining room and a separate counter service lunch room. In this kitchen are a refrigerated salad table, in which salads and sandwich spreads are preserved and chilled; a refrigerated soda fountain, and a large set of ice cream cabinets.

In each of the eight intermediate stations, three Frigidaire compressors serve a refrigerated salad table, fountain, two large ice cream cabinets, and a refrigerator cabinet in the kitchen.

Some idea of the volume of foods served to travelers on the turnpike may be obtained by considering the size of the personnel of the restaurant organization. At "Midway Station" there are 28 hostesses, waitresses, and cashiers in the dining room; 22 men and women in the kitchens; and 10 girls in the counter lunch room.

Not yet ready, although a part of the plan for the "Midway Station," is an outside dairy bar, where service will be provided on a year around basis. The table seating area, on an attractive terrace, will be open in the summer and enclosed with glass in the winter. Refrigeration for the dairy bar also will be supplied by Frigidaire.

Year's Guarantee Called Need For Used Commercials

UTICA, N. Y.—Used commercial refrigeration equipment should be "guaranteed the same as if it were new" to satisfy cautious buyers, in the opinion of F. J. Mangan of Averill-Mangan Co., commercial refrigeration dealer here. The company handles Hussmann cases, together with Brunner, G-E, and Hussmann compressors and operates a complete re-building shop.

"Although there are still lots of ice jobs to be traded out around Utica," Mr. Mangan said, "we get some used electric refrigeration equipment on almost every deal we take. In order to resell this merchandise and operate at a profit, we recondition it so we can give it a 'new merchandise guarantee' with free service for one year.

"From the standpoint of the commercial refrigeration customer, service is the most important thing. We have one instance where the owner is renting a beer cooling system from us at \$28 per month, rather than purchase it at the same figure each month.

"He knows that as long as the system belongs to us we will take good care of it and he will be free from any service expense."

The organization specializes in the "Viso-Shaft" beer cooling system. On these jobs a shaft is run from a cooler in the basement to a point back of the faucets on the bar. This shaft is lined with white imitation tile, and is lighted inside. It is capped with a 3-thickness glass of the type used in display cases. When the light is on customers can look down and see the beer lines running direct from barrels in the basement.

The lines are kept cold by a column of air from the walk-in refrigerator below. Air is forced to the top of the "Viso-Shaft" by means of a small fan. Thus temperatures at the top of the shaft are close to the 38° F. temperature in the walk-in cooler. In some instances the company has installed thermometers near the top of the shaft so that customers can see the exact temperature when the shaft is lighted.

Mr. Mangan asserts that this type of system has a pronounced appeal to the beer dispenser, because of the effect it will have on customers

3-Compartment Refrigerator Fills All Needs For A Sportsman's Home



In this specially designed refrigerator, the general food storage compartment is at the right, upper left is the ice cube maker, and lower left is the sharp-freeze compartment. The user is a California sportsman who also likes to buy foodstuffs in large quantities.

STOCKTON, Calif. — Something unusual in the way of a food storage refrigerator design is to be found in the 3-compartment reach-in electric refrigerator recently installed in the new home of James Connell, ardent hunter and fisherman of this city.

Mr. Connell is also an exponent of purchasing food in quantity, so the 45-cu. ft. refrigerator is designed to meet the requirements of all of Mr. Connell's hobbies.

The general storage compartment (on the right in the photograph) is equipped with a Peerless "gun cooler" and may be used as a pre-cooler prior to sharp freezing. Three Peerless "zero pads" are employed in the frozen food or sharp freeze compartment at the lower left. The section in the upper left provides a large supply of ice cubes and is

equipped with a Peerless ice cube maker. Three Peerless VL valves with properly sized orifices to match each coil and model A-1 Peerless capacity booster complete the low side equipment in the cabinet.

Refrigeration is furnished for the ice cube and "zero pad" compartments by a 1/2-hp. Par compressor. A 1/2-hp. Par condensing unit furnishes refrigeration for the general storage compartment and for a Peerless unit cooler which is installed in a small walk-in cooler in the basement of the home.

The job was sold and installed by A. L. Worth, Refrigeration Service Co., Stockton. Jesse E. Rauch, engineer for the California Refrigerator Co., San Francisco jobber, assisted in the engineering and selection of the equipment used. Simplex Mfg. Co., Oakland, Calif., designed and produced the cabinet.

visiting the bar.

"They like to look down the shaft," Mr. Mangan says, "and see how the beer is cooled, and how the liquid lines run direct from the barrels below."

The company has two full time salesmen, and four service men. Service contracts have been made with several national organizations.

Old water-cooled compressors are taken in trade and converted to air-cooled units before they are sold

again. All used equipment is completely refinished in the firm's own spray booth and when ready for resale has a "brand new" appearance.

The Averill-Mangan company has recently purchased the building occupied here. The first floor is used for a display of new and used equipment, offices are on a balcony at the rear giving a full view of the store, and upper floors are used for the rebuilding shop and storage of refrigeration equipment.

Investigate this Lower Priced Refrigeration Control

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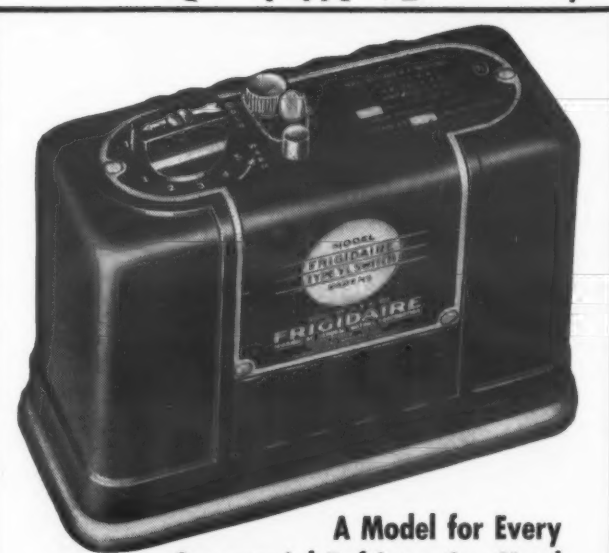
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VOL. 31, No. 16, SERIAL NO. 613
DECEMBER 18, 1940

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"America today is working
a shorter number of hours per
week than any other nation—
certainly any other involved in
war or defense.

"Output can be increased
20% by working six days a
week in place of five days.
It seems clear this should be
the first step, if the point is
reached when the slack of
unemployment has been taken
up and the increasing speed of
industry has been utilized to
the fullest practical extent.

"The penalty for overtime
should be cancelled during the
emergency to encourage a
longer work week. . . . We
should expand existing produc-
tion in harmony with the
increased purchasing power
available, to the point of full
productivity.

"We should increase the
hours of work per week should
the necessity arise."—Alfred P.
Sloan, Jr., Chairman, General
Motors Corp.

Small Business Takes the Rap

WE have been talking to
some dealers recently. They
had been feeling pretty good about
1940. Their volume for the year
was excellent. It was so good
that it made up for lower prices
and smaller margins—just as the
manufacturers had said it would
last February. Their earnings
would have been good, too.

But then they began to figure
up their taxes.

What they learned from these
tentative figures was quite a
shock. Taxes will knock billyhell
out of profits for 1940. What's
more, taxes have to be paid in
cash, whereas profits aren't figured
that way. A number of dealers
tell us that a good portion of
their profits have already been
spent—constructively, too.

They will be hard put to it
to find cash for income taxes next
spring, and at the same time lay
in adequate stocks of merchandise
for the big season that they
expect.

Sometimes we wonder if the
people who are running things
for us realize just what they have
done. They announce an aim, a
purpose. It sounds good. We
all—or most of us—approve.
But the legislation, or the admin-
istration of the legislation, which
is supposed to accomplish that
aim sometimes does something
else altogether.

Excess Profits Tax Designed To Prevent War Profiteers

For example, the new excess
profits tax—which is hitting a lot
of dealers, distributors, and job-
bers right between the eyes—was
designed to answer the demand
of the people that there be no
millionaires made out of current
spending for defense.

That is a laudable objective.
Making money out of human
misery—or out of fulfilling a
patriotic duty—is surely reprehens-
ible. We want no part of it.
But the tax law as enacted does
a whole lot of other things than
reach the stated objective. As it
stands now, this mess of a law
places its heaviest penalties on
small business. And it sideswipes
whole crowds of innocent by-
standers who never will see any
defense contract money.

News Subscribers Are 'Small Business' Men

Now by far the biggest part
of the readership of this paper
consists of small business men.
We might even go so far as to
say 90% of its readers are small
business men, or connected with
such. We are all for them. They
are the backbone of the nation.

What's more, this publication
falls into that classification, too.
We're winding up 1940 with an
excellent record, also; but wow!
When we figure up our taxes, it
takes all the joy out of life.
So we can sympathize with the
dealers who wonder if the game
is really worth the candle.

Confiscatory Taxes Stop Development of New Ideas

It's not that we want to take
more money out for ourselves
individually; it's the fact that we
have a lot of ideas for expansion,
and new services. If the new
taxes hadn't fallen on us so
heavily, we could have tried out
these ideas, and perhaps con-
tributed something new and in-
teresting to the business of
keeping industry informed. As it
is, we can't gamble on them for
fear of jeopardizing our working
capital.

Small business is often young.
Most often it has scant working
capital. It hasn't had time to
accumulate capital; and the way
taxes are increasing, it may never
have the chance to accumulate
capital. So when such small
concerns show reasonably good
earnings, these earnings are com-
puted at a high ratio to capital,
so that they are really slapped
down by the new tax law.

Does Government Mean To Freeze Existing Structure?

Surely the people who are
running things down at Washing-
ton don't mean to freeze the

present business structure—keep-
ing big business big, and small
business small. Surely they don't
mean to discourage young organi-
zations with big ideas from
developing those big ideas—and
thus replacing in the economic
system worn-out ideas and satu-
rated markets, and keeping the
ball rolling.

Yet that's just what the present
tax legislation does. There's no
chance to "plow back" profits into
the business for research and
development, for expansion, for
gambling on an idea. Those
concerns which don't have a lot
of do-re-mi socked away are
simply stuck with their status quo.
What's the social benefit to that?

Dealers & Distributors Are 'Innocent Bystanders'

We agree that there shouldn't
be a new crop of "war baby"
millionaires. But no dealer or
small manufacturer that we know
has any hopes of becoming a
millionaire. The height of his
ambition may merely be that of
helping to pioneer a new industry
like air conditioning. He thinks
he knows what to do, and would
like to take a crack at it.

But the tax laws as framed
take so much of his cash away
from him that he can't afford to
lose money for a few years in
doing such a pioneering job (and
pioneering is always a losing
proposition at first).

Maybe the boys down there in
Congress had better take a second
look at what they've done.

Roger Babson Comes Across With Interesting Material In Corroboration

P.S.: One day after the above
editorial was written, Roger Bab-
son in his regular financial column
made the following pertinent
remarks:

"The trouble with business today
is that it is like a church without
a Sunday school. Without Sunday
schools, as feeders for church
memberships, the doors of our re-
ligious houses would have to close.
Our business structure, likewise,

needs more small concerns which
in time can grow into big ones.

"One normal reason for unemploy-
ment is the lack of employers.
My father always felt a man's
standing in his community depended
upon whether he was an employer
or an employee. Any young man
who wants to become an employer
should be encouraged to get into
business for himself.

"Smaller and younger business
concerns should be favored by gov-
ernment agencies and bankers. This
is also the best way to prevent
monopolies. Unfortunately, young
business men and small concerns
have received scant, if any, encour-
agement up to the present time from
government agencies.

"Private agencies, particularly the
banks, have also given them the
cold shoulder. Banks with funds of
depositors to invest are still attracted
to the commercial paper of large
concerns at rates of one-half to 1%.

"Most of our bank officials have
forgotten that the present size of
many of our institutions was brought
about by the faith and interest their
predecessors showed in the small
business man and small concern.

"Unfortunately, collateral has
superseded character in the minds
of too many bank directors.

"I forecast a new deal for invest-
ment dealers and a distinct change
from a desire by investors to own
only the "blue chips." There are
small concerns, both listed and un-
listed, that are destined to enjoy
great growth and profits. Invest-
ment dealers should take on a new
lease of life and get wise to coming
changes.

"This anticipated interest in small
companies and the changing status
of many men from employee to
employer class should especially
benefit the smaller communities.

"The 1940 census figures show
conclusively how the growth of
many large urban centers has already
stopped. Salaries, wages, living
costs, and especially taxes are lower
in the smaller towns, nearly all of
which now have good transportation
and other facilities necessary for the
small manufacturer.

"Horace Greeley advised the young
man to go West. Our great West is
still a land of many opportunities,
but regardless of the young man of
today's direction, let him locate in
a relatively small community.

"Business men and investors alike
should remember that, if one knows
how to use it, 'a small fire warms
better than a large one.'"

They'll Do It Every Time . . . By Jimmy Hatlo



LETTERS

Presenting: A Customer From Puerto Rico

Fogel Refrigerator Co.
16th & Vine Sts.
Philadelphia, Pa.
Dec. 5, 1940

Editor:

Mr. Matthew Rodriguez, of Puerto
Rico, a very good friend of our com-
pany, is in the United States at the
present time for the purpose of
making arrangements to act as a
manufacturer's representative for re-
frigeration parts and supplies, light-
ing equipment, and allied lines.

Mr. Rodriguez may be reached at
238 E. 33rd St., New York City, from
the present time until Jan. 1, 1941.

We shall appreciate any assistance
which you may extend in the form
of an announcement of the above
subject in your news columns. It
will also be helpful to Mr. Rodriguez
if you will send him a tear sheet of
any such announcement which you
print, so that he may be placed in
a better position to follow up the
work you are doing.

We would also like to suggest that
you supply Mr. Rodriguez with
sample copies of your publication for
the next four or five weeks, as these
will probably be very helpful to him.

Thank you very much for your
cooperation in the above matter.
EDWARD K. RAKER

Tobacco Curing

Electricity Department
City of Salisbury
P. O. Box 73
Southern Rhodesia
Oct. 7, 1940

Editor:

My attention has been drawn to an
article on page 22 of your issue for
April 19, 1939, concerning a talk by
Prof. Albert H. Cooper of the Virginia
Polytechnic Institute, in which he
described a new air conditioning
technique for the curing of tobacco.
I should be obliged if you would con-
tact Prof. Cooper for me and obtain
what information he is able to supply
in this connection.

I am interested in the use of elec-
tricity in the tobacco industry, and
would be grateful if you could assist
me in this matter.

JAMES S. CLINTON,
City Electrical Engineer

'Permit' to 'Prevent'

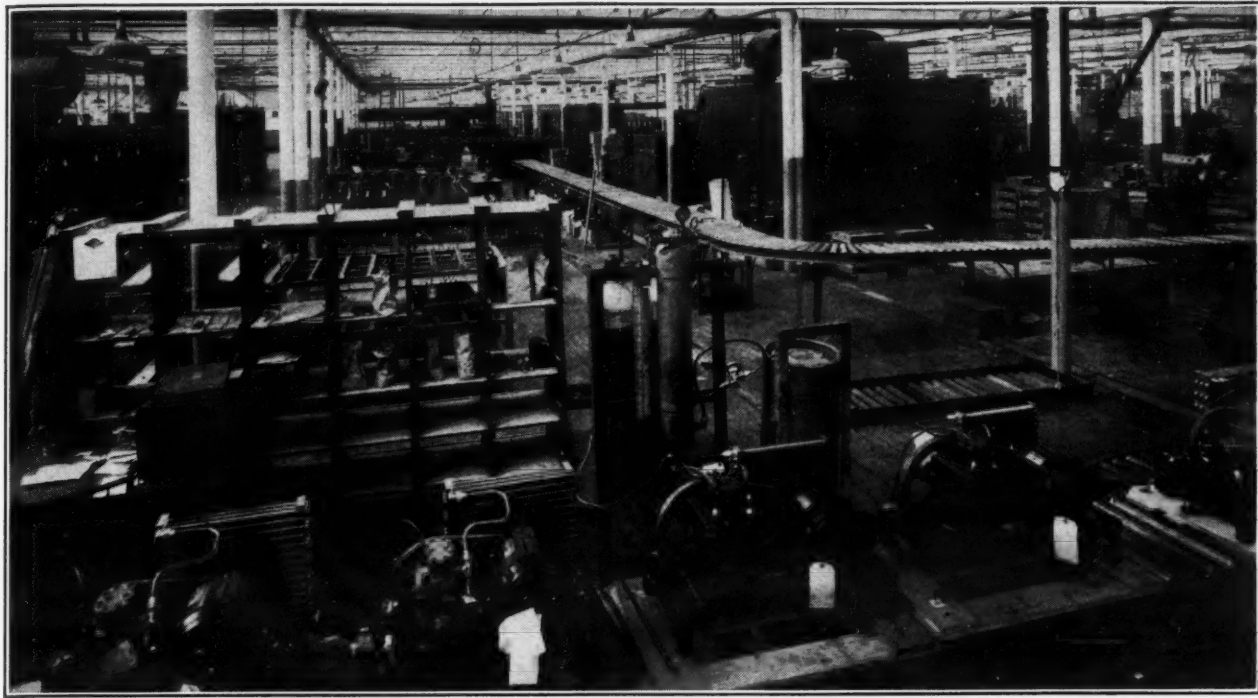
Superior Valve & Fittings Co.
1509 W. Liberty Ave.
Pittsburgh, Pa.
Dec. 9, 1940

Editor:

Please refer to the fifth line, fourth
paragraph, column 3, page 12, of
the Dec. 4 issue, and note that the
last word which now reads "permit"
should be changed to read "prevent."
This is a typographical error in the
original copy sent you.

K. M. NEWCOM,
Vice President and Sales Manager

Where Universal Cooler Units Are Now Being Assembled



This is the assembly section of the plant at Marion, Ohio recently occupied by the Universal Cooler Corp. Additional space provided in this plant has permitted a "straightening out" of the production line with a consequent saving of about 30% in materials handling time, declared officials of the company.

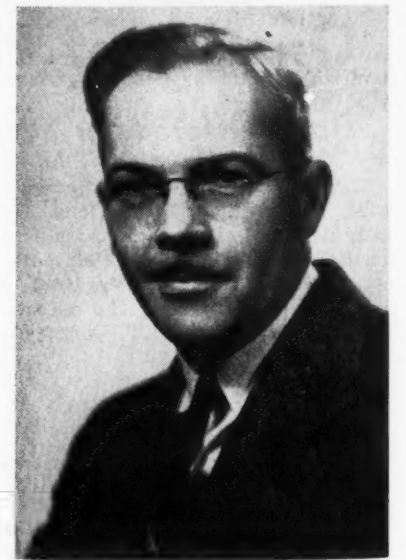
Stanley Morse and R. G. James Appointed By Universal Cooler

MARION, Ohio—Appointment of Stanley H. Morse as purchasing agent, and R. G. James as personnel manager of Universal Cooler Corp., has recently been announced by F. S. McNeal, president and general manager.

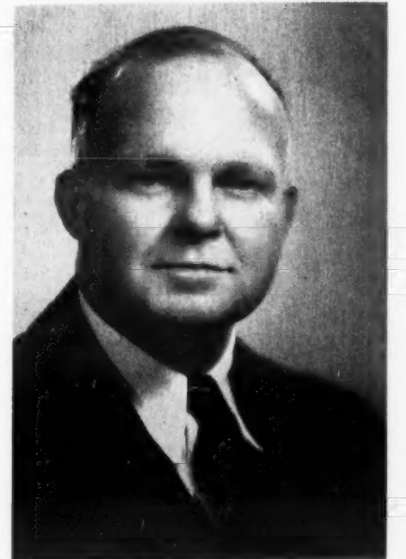
Mr. Morse was formerly assistant chief engineer of the company. He had previously been with General Motors Corp.'s new project division, and prior to that was chief draftsman for Universal Cooler Corp. He has also had experience with Packard Motor Car Co., Hupp Motor Car Co., Ford Motor Co., and Chevrolet Motor Co. in automotive and machine design work.

Mr. James came to Universal Cooler recently from the C. Nelson Mfg. Co. of St. Louis, where he had been plant superintendent for the firm, which specializes in ice cream cabinets. He was previously plant manager of C. V. Hill & Co., manufacturer of commercial refrigerators, with Grand Rapids Store Equipment Corp., the Russ Soda Fountain Co., and the Yellow Truck & Coach Mfg. Co.

Mr. Morse was educated at Detroit City college and the Detroit Institute of Technology, and Mr. James is a graduate of New Hampshire university.



STANLEY H. MORSE



R. G. JAMES

Reuss Handles Baker Line In Quaker City

(Concluded from Page 1, Column 5) prior to 1937 assistant chief engineer for Baker.

Mr. Reuss' firm is one of the prominent heating and power piping companies in the East. A number of outstanding refrigeration and large power plant installations in the Philadelphia territory have been made by his company.

Mr. Mallinckrodt's first connection with Baker was from 1927 to 1937, during which time he became assistant chief engineer. During his connection with Carrier, Mr. Mallinckrodt was associated with development and contract engineering.

Many Alterations & Additions Made To Universal Cooler's Plant In Marion, Ohio

(Concluded from Page 1, Column 2)

section includes a basement which contains the mail room, file room, and recreation room. Along the east side of the plant are located the factory offices which include a first aid department with a registered nurse in charge.

Three additions to the original factory building include a new shipping and loading dock equipped with a railroad track capable of holding four freight cars and facilities for loading and unloading 12 additional freight cars and a truck well and

loading dock with room for two transport trucks.

A new receiving dock and storage room for rough castings is housed in another new building, and the third was built for modern wash rooms for factory workers.

Other alterations and additions included a ramp, hoist, and track to facilitate handling refrigerant and oils in carload lots. For this storage location these materials are piped underground to various metering devices in the factory.

Moving operations were effected without a complete break in operations. Some manufacturing activities were under way in Marion before the final shutdown in Detroit, and the company had manufactured a considerable surplus stock in advance of the move to take care of the slowing down of operations.

One hundred and sixty-three loads of 10-ton trucks and 18 railroad freight cars were required to effect the move. A total of 1,646 tons of materials and equipment were moved. At the start of the moving operations 95 men were used at Detroit and 55 at Marion.

Universal Cooler Corp. officials estimate the concern will have spent \$100,000 for its new home, including the purchase price and remodeling, when work which is still under way at the plant is completed.

The company was invited to come to Marion by a Chamber of Commerce committee, which raised a fund to help cover moving expenses.

A special issue of the Marion Star, published Dec. 7, paid tribute to Marion's new industry, with all advertisers welcoming the company. In addition to many photographs of the plant and group personnel, the issue included photographs and business biographies of the following:

F. S. McNeal, president and general manager; Tom S. Pendergast, vice president and sales manager; Edward A. Langwish, treasurer; J. B. Nims, plant engineer; William W. Higham, chief engineer; W. A. Devlin, factory manager; Stanley H. Morse, purchasing agent; Eldred Evans, chief inspector; H. L. Morrison, service manager; R. G. James, personnel manager; J. W. Jenkins, general foreman; James Driscoll, general foreman; J. F. Bryan, traffic manager; Edward P. King, maintenance supervisor; and O. C. Jordan, manager of material control.



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But this is only one of hundreds of proving and testing operations adopted by Lau to assure highest precision and advanced standards of operation. In our recently enlarged plant, every facility for precision manufacture has been provided to make doubly certain that LAU leads the industry in quality, dependability and service.

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Tests Reveal Some New Facts On Use of Heat Exchangers

Data Offered on Superheat Settings and Sizing

NEW YORK CITY—Laboratory tests made under conditions that simulated as closely as possible a practical field installation have demonstrated that suitable heat exchangers can increase the effective capacity of "Freon-12" condensing units, and are valuable on low superheat applications, David Crampton, Wallace & Tiernan Co., told members of the American Society of Refrigerating Engineers during their convention here last week.

Exchangers work with "Freon-12" because considerable heating of the suction vapor occurs in the machine anyway, said Mr. Crampton, and to a lesser extent, the evaporation of refrigerant from the oil contributes to their effectiveness.

The tests which Mr. Crampton made were run to throw some light on capacity gains to be expected by the use of heat exchangers, and to determine what factors should influence their selection.

The particular application of the system in which the heat exchanger tests were made was the refrigeration of a sweet water bath held in the neighborhood of 40° F.

PRACTICAL APPLICATION USED

According to Mr. Crampton, there has been some confusion on the matter of just what heat exchangers accomplish, and in the tests an effort

was made to investigate the following theories of what they do, as follows:

1. Hunting of expansion valves allows intermittent slugs of liquid to pass, which are evaporated by the exchanger before they can reach the compressor.

2. The heat exchanger evaporates "Freon-12" dissolved in oil which is circulating in the system, and which does not evaporate in the low side.

3. Gas entering the compressor at low superheat contains some superheated liquid as a fog which because of the small droplet size is more or less in equilibrium with the vapor. The heat exchanger would evaporate this.

4. The vapor picks up heat from the hot piston and cylinder walls, which increases the specific volume in the cylinder anyway so that heating by the exchanger is partly masked.

In making the tests Mr. Crampton designed a calorimeter to operate at 40° F. bath temperature. A thermal expansion valve was used. Such a calorimeter operating at approximately the temperature desired in the final equipment soon was found to be a good setup for investigating evaporator and expansion valve performance at the same time.

Four heat interchangers were tested, three being of the finned tube variety, in which the liquid flows

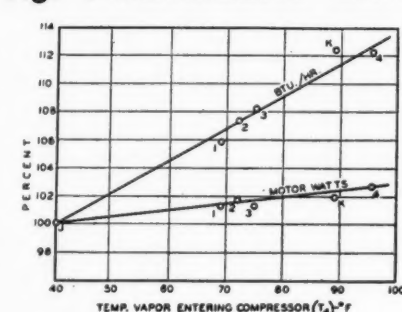
Table 2—Performance of Various Heat Exchangers At Normal Superheat

Suction Pressure lb./sq. in. g.	Heat Exchangers	B.t.u./hr. in Calorimeter	B.t.u. Transfer in Exchangers	Vapor Area, Sq. Ft.	Temp., Liquid In, °F.	Temp., Liquid Out, °F.	Temp., Vapor In, °F.	Temp., Vapor Out, °F.	Log Mean Temp. Diff.	Fictitious K Factor Based On Vapor Area, B.t.u./ sq. ft./hr./°F.
21.1	1 Fin	4,235	288	.38	112	97.5	40.5	69	49.5	15.1
21.1	2 Fin	4,300	311	.58	112	96.5	41.5	72	47	11.4
21.1	3 Fin	4,335	326	.82	113	97	41	75	46	8.6
21.1	4 Tube	4,495	582	1.12	111	81	41.5	95.5	26	19.9
8.9	2 Fin	2,650	223	.58	102.5	84	19.0	67	47.5	8.07
7.3	4 Tube	2,540	372	1.12	102	68	10	85	17	8.5

through in the inner tube and the vapor spirals back counterflow around the annular space between the fins. The fourth was a conventional tubular exchanger, 10 feet long, made of 1/2-inch tube inside 3/4-inch tube, vapor in the 1/2-inch tube and liquid counterflow in the annular space.

The first set of capacity tests, Mr. Crampton pointed out, were run with various interchangers and with the expansion valve at 15° F. superheat, and a constant compressor suction pressure of 21.1 lbs. per sq. in. Calorimeter was maintained about

Fig. 1—Performance Curve



Capacity Increase of Interchangers Vs. Temperature Vapor Entering Compressor (T₁)

40° F., room temperature 90° F. Results are shown in Fig. 1.

This curve, said Mr. Crampton, gives an indication of the increase to be expected when interchangers are used in small self-contained units operating at 20° F. refrigerant temperature. Heat exchangers would be still more effective when installed on equipment with long uninsulated suction lines, the speaker pointed out.

WHAT ABOUT THEORIES?

Referring back to the various possible explanations of heat exchanger behavior which he mentioned at the beginning of his talk, Mr. Crampton said the following conclusions were reached on these points:

1. Expansion valve behavior was so constant as to eliminate the possibility of there being any hunting or liquid slugs.

2. In any system, a little superheated liquid may be entrained back with the suction gas to the machine. Also, some "Freon-12" remains dissolved in the oil which circulates. By heating the suction vapor, "Freon-12" from both these sources is evaporated giving rise to additional refrigerating effect.

3. Some liquid or liquid dissolved in oil does travel with the suction gas. However, it is felt that the action is not responsible for a large part of the heat exchanger's performance.

4. Heating of the suction gas in the head of the compressor has an important bearing on exchanger performance. Such heating depends on the design of the machine. Hermetic machines may be expected to have a large heating effect if the suction gas is brought into the

Table 1—Capacity With Various Superheat Settings

Run	Bath Temperature 40°			Heat Exchanger Used
	Back pressure, lb. per sq. in.			
	21.1	25±	25±	
	Superheat, °F.			
	15°	9°	2°	
1	4,000	4,550	Erratic	No exchanger
2	4,300	4,775	4,805	Medium No. 2
3	4,495	4,885	Tubular No. 4

crankcase or near the motor windings.

For maximum efficiency, it is desirable to operate a compressor at the highest possible back pressure, but in practice, a compromise is often necessary, Mr. Crampton pointed out.

For a water bath maintained at 40° F., a certain B.t.u. per hour cooling effect will be obtained and the machine will operate at a definite suction pressure of say 21.1 lbs. As the superheat is reduced, the suction pressure and the capacity will rise. This continues up to the point where the temperature difference between bath and coil is just enough to accomplish the necessary heat transfer.

SUPERHEAT SETTINGS

Further reduction in the superheat setting of the expansion valve will not result in higher back pressures, since the coil-bath heat transfer has become the limiting factor. In these tests, limit was reached at about 8° F. with a transfer of 4,800 B.t.u.

It is true that the coil can be flooded a little more if the superheat is reduced to 2–5°, but without an exchanger considerable decrease in capacity may occur due to frost-back. A heat exchanger will remedy this situation, although too low a superheat, even with an exchanger, will result in erratic valve operation.

Table 1 shows how the capacity varies when the superheat setting is changed, holding the bath constant at 40° F.

In the table, explained Mr. Crampton, the increase in the second column is caused by the higher back pressure. Note that the increase in the third column is small. In this case, the practical difficulties, flooding at the start of the cycle, etc., would indicate a 6–10° superheat setting preferable, the speaker declared.

Heat exchangers at low superheats will show a greater increase when used in an installation with bare suction lines.

METHOD OF SELECTION

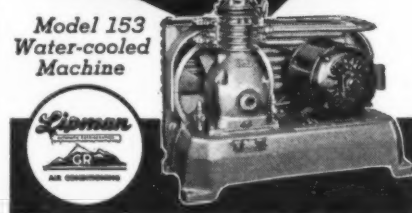
Selection of a heat exchanger, Mr. Crampton explained, will depend on how it is to be used, whether on a high or low temperature installation, whether on high or low superheat. Table 2, taken from the tests, shows pertinent data on exchanger performance at normal superheat settings.

An allowance of .1 to .3 square feet of vapor surface per 1,000 B.t.u. is suggested as a starting point in selecting interchangers, using the higher figure for low temperature applications. An even more rough but useful approximation suggested by Mr. Crampton is 1 square foot per compressor horsepower.

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GENERAL REFRIGERATION DIVISION
Yates-American Machine Co.
Dept. AC-3, Beloit, Wis.



Mr. Crampton pointed out that his paper applied to "Freon-12" systems only, and shouldn't be applied to systems using other kinds of refrigerant, without a thorough investigation of all the factors involved.

ACCUMULATORS SUGGESTED

"In low temperature work," declared K. M. Newcum, Superior Valve & Fittings Co., "it is desirable to make use of accumulator in conjunction with the use of a heat exchanger."

"At the start of the cycle the system doesn't have time to heat up, perhaps not for an interval of as long as 4 minutes, and there will be a 'slopover' effect," he explained. "Therefore, the liquid should lie in the accumulator until it warms up."

There was some discussion on the point as to whether a heat exchanger was so important in larger systems, with some argument to the effect that increases in efficiency might be termed negligible.

However, R. M. Armstrong of Richmond Engineering Co., a firm which specializes in large water-chilling installations, declared that heat exchangers perform two valuable functions in large systems (1) by "boiling out" the oil before it goes into the evaporator; (2) in extending the amount of useful evaporator surface.

"Did your tests show the pressure drop through the heat exchanger, and does such a pressure drop impose a penalty on the efficiency of the system?" asked J. G. Bergdoll, York's chief engineer.

There was no great pressure drop through any of the heat exchangers tested except the tubular type, answered Mr. Crampton, and hence no penalty was imposed upon the system.

Air Cooling Installations Lag In Schenectady

SCHENECTADY, N. Y.—Commercial and industrial refrigeration has been good here this year, but "very few" air conditioning systems have been installed, according to Henry Levine of the R. J. Murray Co. here. The company specializes in commercial refrigeration, and does some air conditioning, Mr. Murray reports.

Installations made by the Murray organization during the past year include fur vaults, milk plants, ice cream plants, and apple storage jobs. Mr. Levine says that many apple storage systems have been installed in this vicinity in the past, but that a "poor apple season" last year caused a cessation of this activity.

F. J. Kalteux of Kalteux Bros., G-E heating and air conditioning dealer in Schenectady, states that "only five or six" air conditioning systems have been installed here this year, including "one or two" package systems. The latter included 5-ton units in one beauty parlor and one cafeteria.

The Kalteux Bros. firm specializes in the sale and installation of G-E winter air conditioning and automatic heating equipment.

Cold Tunnel Conveyor Used In Candy Plant

BALTIMORE—A modern cooling tunnel, 75 feet long, thought to be one of the first applications of its kind in this field, has been installed in the new Josselyn's candy manufacturing plant here. Through this cooling tunnel, candies are conveyed into the air conditioned packing room.

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Industry Looks To Radiant Heating as Aid To Comfort Conditioning Problems

By Henry Knowlton, Jr.

Radiant heating, by means of pipes or coils embedded in the walls, floor, or ceilings may become the next great fundamental change in the mechanical equipment of buildings. Practiced in England, the Scandinavian countries, and Switzerland for a number of years, the method is rapidly becoming of interest to the air conditioning industry.

In the development of many things, sound practice evolves from a theory. In the case of radiant heating, many theories are being advanced from the limited practice that has been developed to date. From a technical standpoint information is controversial; from a practical standpoint, the jobs now installed are the subject of interest on the part of many people.

WRIGHT IS LEADER

It is well known that Frank Lloyd Wright, architect, is responsible for a large percentage of the systems that have been installed to date. While Mr. Wright prefers to call the system "gravity" heating, and attribute its origin to the Koreans, most members of the mechanical professions in this country speak of the system as "radiant" or "panel" heating or cooling.

Indicative of the interest now being shown in the subject is the experience of the Misses Notz who reside in Millin Township near Pittsburgh. Living in a house designed by Frank Lloyd Wright and constructed by Edward Brown, Jr. and Associates of Uniontown, Pa., the Misses Notz enjoy the comforts of a radiant heating system. They have not enjoyed, however, the continual intrusion on the privacy of their home, by well meaning individuals who wanted to inspect the radiant heating system, and who remained to ask countless questions.

YOU PAY TO SEE IT

To put an end to this unfortunate situation the Misses Notz recently started charging 50 cents admission, to those inspecting their home. Up to the moment the admission charge has not discouraged anyone interested in seeing the system, and the visitors continue. Interest in the job, and in the subject of radiant heating, goes on unabated.

Any exposition of radiant heating goes back to high school physics. Heat is a form of energy. Further, heat is a form of energy created by change in the chemical structure of materials. "Radiant" heat is a form of energy that travels, like light waves, in straight lines, and may be intercepted and given off by any body. It is reflected by a bright surface, it is absorbed and given off again or re-radiated by a black body. The ability of any material to "radiate" or re-radiate heat depends on its color and surface characteristics.

'HEAT' FROM THE SUN

Perhaps the most easily understood example of the action of radiant energy is found in the sun. The sun's rays travel some 90,000,000 miles to reach the earth; the temperature of the atmosphere in most of this space is known to be extremely cold. It follows that air temperatures do not affect the passage of radiant heat—and that the sun's energy is immediately converted to other forms of heat on striking the earth, or any intercepting object.

Anyone who has been skiing, or has tramped across snow covered country during sub-zero weather knows that it is possible to perspire freely in bright sunshine, particularly in places protected from the wind.

The brilliant white surface of the snow reflects radiant heat and the heavily clothed human body intercepts it.

Under these conditions, when the body is giving off heat rapidly because of strenuous exercise, it soon becomes necessary to remove the heavy coat or jacket for comfort. Pictures of bathing girls on skis, in Switzerland or at Sun Valley, Idaho are not just "publicity" pictures. It is possible to be comfortable on the surface of heavy snow with very little clothing, provided there is no wind to increase body heat loss by convection.

For some time G. B. Cushing, promotion manager of A. M. Byers Co., Pittsburgh, has been collecting all available data on radiant heating. A booklet recently published by the company describes radiant heat as follows:

"The exact nature of radiant energy is somewhat obscure, but it is well known that thermal radiations possess the same properties as light and are in fact only different from light in their wave length.

THERMAL RADIATION

"Thus, thermal radiation is transmitted at the rate of 185,000 miles per second in a straight line at right angles to its source; it always flows from a hot body to a cold body; it can be focused exactly the same as light rays; it is not affected by air currents; and it can be reflected or absorbed in the same manner as light rays."

Referring to the phenomena of re-radiation mentioned above, the booklet says, "Thus, any cold body warmed by absorption of radiant heat will in turn become a secondary source if there is still a colder body in the vicinity. And in addition all bodies reflect radiant heat to some extent.

"Finally, the intensity of thermal radiation is proportional to the temperature of the source. (Exactly, to the fourth power of the absolute temperature.) . . . Obviously at any given temperature a wide range of wave lengths is given off, the sum total of which we obtain as radiant heat."

THE HUMAN FACTOR

The late F. Paul Anderson, former dean of engineering at the University of Kentucky, often warned members of the air conditioning industry that people were more important than air in any consideration of air conditioning. His basic thesis was that the air conditioning engineer should never forget the object of his efforts—human comfort.

At the outset, radiant heating and cooling does not take the functions of air conditioning, air temperature, humidity, movement, and cleanliness, into consideration, because it has little bearing on any of these factors. Its point of embarkation is the human body—not the air.

Physiologists and engineers both know that man is a heat losing animal. The human body constantly gives off heat, by radiation, convection, and evaporation. Comfort may not depend as much on the rate of heat loss, as on the way this heat is dissipated.

As an example, people sitting in a theater, at an air temperature of 75° and a relative humidity of 50% may experience the sensation of cold feet, and cold legs, because heat is being radiated from the body to the cold mass of concrete which forms the floor of the building. The air temperature is perfect—the actual sensation is acute discomfort. Similar sensations are often gained by sitting near a cold wall or window.



C. B. Cushing, sales promotion manager of A. M. Byers Co., Pittsburgh, who is gathering data on radiant heating.

According to the best present scientific opinion, approximately half of the 400 B.t.u. given off by the human body hourly are dissipated by radiation—yet modern heating and cooling does not always take this fact into consideration. The purpose of radiant heating and cooling is to offset body heat losses by radiation, by warming cold surfaces to which the body constantly radiates heat, or by cooling these surfaces to increase the flow of radiant heat from the body during warm weather.

It may not be possible for radiant heating or cooling to entirely supplant the methods now used in air conditioning. Walter Rhoton, air conditioning contractor of Cleveland, who has studied radiant heating for a number of years, asserts that the ideal solution will be found in a balanced control of convection, evaporation, and radiation.

Air temperatures control heat loss from the body by convection, humidity controls the loss by evaporation, and it is possible, by means of radiant heating and cooling, to control the loss by radiation. All have a marked effect on human comfort, which is the primary object of air conditioning.



Conditioning Needed In Defense Industry

CHEEKTOWAGA, N. Y.—Precision manufacturing of lenses, vital to national defense, has been aided by the installation of a Carrier air conditioning system in the new Spencer Lens Co. plant here. The system, which serves the several important departments of the plant, includes three reciprocating compressors.

One 50-hp. compressor and two duplex units of 30 and 20-hp. capacity, are used to provide refrigeration. Three evaporative condensers, one for each refrigeration circuit, effect economies in condensing water costs. Conditioned air is distributed from three built-up conditioners.

Providing year-around air conditioning, the system is now being installed in the company's new building here. Gillmore, Carmichele & Olson Co., engineers and contractors of Cleveland, specified that the system be installed in time to dry the gypsum roof which is being used on the building.

To aid in the building of special lenses for optical instruments, the modern air conditioning system serves the lens development and experimental process room, the cementing room, the technical production, and silvering rooms.

The installation was made by the Cleveland office of Carrier Corp. of which L. C. Powers is manager.

Beauty School Cooled

DALLAS, Tex.—Complete year-around air conditioning has been provided in the new and entirely modern Marinello Beauty School here. The building is equipped with fluorescent lighting throughout.

(Below) Patrons buying tickets at TWA city office in Pittsburgh are made comfortable by a self-contained Westinghouse unit installed by the Danforth company.



Mobile Cooling Units Used At Airport

BELOIT, Wis.—General Refrigeration division of Yates-American Machine Co. here this year has received orders for 55 air conditioning units for use at airports. The units are mounted on trucks, which also are equipped with generators for use when airport electric power fails.

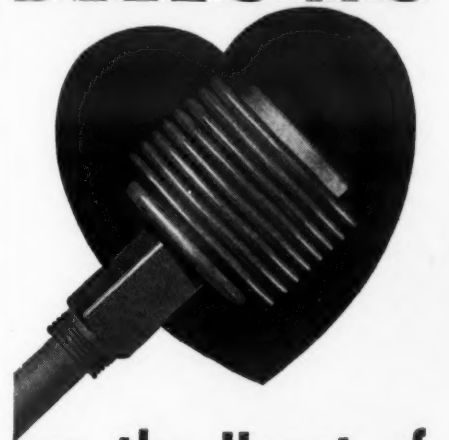
From 1/4 to 25 TONS of refrigeration

Brunner Refrigerating and Air Conditioning equipment comprises air and water cooled condensing units for practically all types of commercial applications up to and including 25 tons of refrigeration... Catalog promptly on request. Brunner Manufacturing Co., Utica, N. Y., U. S. A.



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For details of this seamless, jointless, time-tested "Miracle in Metal" write for Bulletin YO-511.

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Balanced Design of Compressor, Resilient Mountings Cited as Methods of Isolating Vibration In Refrigerating Machinery

NEW YORK CITY—The degree of tolerable vibration in the case of moving machinery is becoming less and less, and refrigerating machinery is passing through this same stage of evolution, Emil T. P. Neubauer, assistant development engineer in the large machine division of York Ice Machinery Corp., told members of the American Society of Refrigerating Engineers at their convention held here recently.

"As a result of the progress made," Mr. Neubauer said, "today refrigerating machinery is being successfully installed in locations where several years ago such applications would have been objectionable, and even unsafe, because of excessive vibration and weight."

"In the design and application of rotating and reciprocating machinery," he said, "there are two ways of controlling the vibration: (1) by means of completely balanced design of moving parts, and (2) by means of partially balanced design and isolation of machine units with the use of properly designed resilient mounting."

Mr. Neubauer discussed only the second phase of the problem of vibration control, giving as a background for the treatment of the problem a review of the fundamentals of vibration. "Vibrations," he said, "fall into two general classes: (1) 'free vibration,' which has no driving force but which, when once started, repeats itself without the aid of any external agency, usually dying out gradually; (2) 'forced vibration,' which is maintained by a driving force of any frequency or combination of frequencies."

"In analyzing some of the characteristics of natural frequency in a vibratory system," Mr. Neubauer said, "the simple pendulum is taken as an example. The natural frequency of a simple pendulum is affected only by its length (considering the gravitational factor a constant). The formula for this relation is rather simple."

$$F = \frac{1}{2\pi} \sqrt{\frac{g}{L}}$$

Where: F = Frequency in cycles per sec.

Where: L = Length of the pendulum.

"A weight supported by a spring will cause a certain deflection of the spring," he said, "and as long as the spring is not stressed beyond the elastic limit of the spring material the deflection will be proportional to the weight. Under these conditions a weight so supported will have a natural frequency with the same relation to the static deflection as the natural frequency of the simple pendulum has to its length, giving the formula:

$$F = \frac{1}{2\pi} \sqrt{\frac{g}{d}}$$

Where: d = Static deflection. (2)

"Using this formula we can calculate the required resiliency or deflection in the supporting medium for a given machine unit so as to obtain the desired natural frequency. However, formula (2) is correct only for special conditions. The general relationship is that the natural frequency is determined by the total elastic constant of all resilient material in contact with the unit to be supported. Therefore, it is more desirable to rewrite formula (2) thus:

$$F = \frac{1}{2\pi} \sqrt{\frac{gk}{W}}$$

$$d = \frac{W}{k}$$

Where: W = Total weight of the unit to be isolated. (3)

Where: k = The total elastic constant of all resilient material in contact with the mass to be isolated.

"The question arises," Mr. Neubauer said, "as to what benefit can be derived by the knowledge which enables the designing of a supporting structure with a desired natural frequency. The answer to this question involves the theory of isolation or the theory of elastic suspension."

LAW OF MOTION

"It is easily understood by the average individual that balanced design is an application of Newton's Third Law of Motion even though it is a rather complex study in all its phases. But why the theory of elastic suspension should be an application of this law is not readily understood. Picture a 1-lb. reciprocating weight (operated by a scotch yoke or crank mechanism) in a machine structure of 10 lb. suspended in space."

"If the 1-lb. reciprocating mass has a stroke of 1 in. relative to some fixed point in space, then the 10-lb. machine structure would be moved .1 in. in the opposite direction or a phase angle of 180°."

The inertia forces of the two moving parts would therefore be equal and opposite at all times (Newton's Third Law of Motion). It is this condition which we try to approach in the theory of elastic suspension.

"Consider a machine unit or body supported by resilient material with some known static deflection. By equation (2) the critical frequency or the natural period of vibration of the body can be calculated. At forced vibration frequencies below the critical frequency the machine will move in phase with the unbalanced forces or very nearly so, and as the speed is increased and approaches the critical frequency, the phase angle approaches 90°."

π or π radians with the motion of the machine lagging behind the disturbing force.

"The resulting vibrations from operating at or near the critical frequency are serious within about plus or minus 25% of critical frequency. When running at this critical speed or 'resonance' the maximum amount of energy is being utilized to produce vibration, and it is the damping factor which limits it to some finite value. As the speed of the machine or the frequency of the disturbing force is further increased the phase angle between disturbing force and machine motion approaches 180° or π radians and at infinite speed it is 180°. This is the true and ideal isolation principle of counteracting the vibratory forces with the inertia forces of the total mass of the machine unit."

BALANCED DESIGN

By carefully balancing the moving parts of a machine the vibrating forces and consequently the machine motion, when isolated, will be reduced to a minimum, according to Mr. Neubauer. "However," he said, "the engineer is often called upon to isolate machines in which he may have little or no control in balancing the moving parts. Therefore, if the movement of a properly isolated machine unit with fixed unbalanced forces is intolerable, correction can be made only by adding mass or 'dead weight' to the machine unit. Any other means of reducing the machine movement will destroy the value of the isolation."

The effect of damping is a very important phase of the problem of isolation, particularly the way in which it affects the machine movement, said Mr. Neubauer.

"Damping is effective and beneficial, on a properly isolated machine, only during starting and stopping when the machine passes through critical frequency. In the isolation region, damping has little or no effect on the machine movement and is definitely detrimental to transmissibility. Therefore, for very sensitive cases use of the maximum amount of weight in the machine unit will keep its movement at a minimum; that the natural frequency of the mounting should be low enough to give — a value of 5 or

greater, not only to hold the transmitted vibration to a low value, but also due to the rapidity of the machine acceleration at the low speeds the criticals are passed before any serious vibration is built up. By keeping the damping factor as low as possible the efficiency of the isolation will not be disturbed."

"By the theory of elastic suspension it has been demonstrated that it is necessary to keep the basic vibratory frequency of the machine well above the natural frequency of the elastically mounted unit. Practice has taught that this ratio of — should be at least 3 to 1 and is economical to go to values of 5 to 1."

"So far we have been dealing with only one degree of freedom, vertical reciprocating motion. Considering a rigid body such as a refrigeration or compressor unit with the plane of the isolators passing through the center of gravity of the unit, it is easy to analyze the six degrees of freedom encountered; namely, reciprocating motion along the three major axes and rotating motion about the major axes. Each of these various degrees of freedom has its own natural frequency and some may be changed independently of the others. However, a well proportioned unit and well designed resilient mounting will have the critical frequencies of all six degrees of freedom close enough so that for practical purposes no trouble will be experienced when the resilient material is calculated with a ratio of 3 or 5 to 1 on the vertical reciprocating critical frequency only."

"When the plane of the isolators is below the center of gravity of the unit (the most practical design), the two horizontal reciprocating motions with centers below the plane of the isolators will be produced. The nearer these centers approach the plane of the isolators the greater is the 'top heaviness' of the unit."

CRITICAL FREQUENCY

"In the mounting of equipment operating at very high speeds a

problem which requires careful consideration is the critical frequency of the substructure. For effective isolation this frequency must be considerably above the natural frequency of the resilient mounting."

"The choice of the material used in the design of the resilient mounting is also important. For the slow-speed type compressor a common speed found in practice is 360 r.p.m. For speeds below this, isolation should not be attempted except under very careful supervision. For 360 r.p.m. the static deflection required for a ratio of — of 3 to 1 is 2.5 in. and for

a ratio of 5 to 1 it is 7 in. For these values of deflection the only choice of material is the coil spring. This also holds true for speeds up to about 700 r.p.m. In consideration of the transverse spring constant (so as to maintain good ratios among the various degrees of freedom) experience has shown that the spring should be designed with a 'working height' equal to 1.0 to 1.5 times the outside diameter."

"A long spring of small outside diameter has very low transverse rigidity and therefore requires some additional means of preventing side drift of the unit and on very sensitive applications this may tend to destroy the isolation efficiency. For speeds of 700 to 1,200 r.p.m. the required deflections range from 0.22 in. to 1.75 in. For these conditions rubber in shear serves as a rather satisfactory material if protected from oil. For speeds higher than 1,200 r.p.m. cork can be applied with very good results."

To show results obtained in the control of vibration in refrigerating machinery, Mr. Neubauer showed several vibration charts of the worst possible combinations such as slow-speed, unbalanced compressors mounted on rather flexible building structures, and even resonance conditions. The compressor in the example illustrated was mounted on the roof of the building which was more flexible than the sales floor.

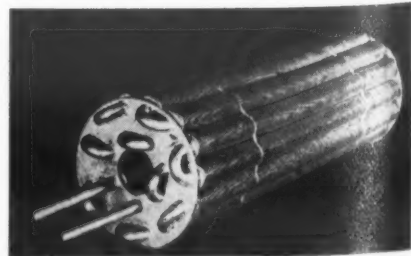
On each of the vibragraph records, the vertical vibration was shown, as well as the horizontal vibration in two directions at right angles to each other. A different set of conditions were taken, such as the unit mounted on 2-inch isolation cork, no isolation material, and mounted on spring isolators.

SPRING MOUNTING

With the machine unit mounted on springs and operating at 475 r.p.m., and with the static deflection of the springs at 6 inches, 95% of the vibration was effectively removed, according to Mr. Neubauer. The results of these tests showed, he said, that a machine is not necessarily isolated because it is mounted on resilient material, illustrating this point by comparing the vibration records under various conditions.

"The refrigeration industry in general," said Mr. Neubauer, "provides typical instances for the application of resilient mounting of partially balanced compressors, and is using various designs of isolation equipment for that purpose. It was pointed out that vibration could be controlled by means of completely balanced design of the moving parts of the compressor. This has been accomplished in a satisfactory manner by the makers of the multi-cylinder compressors of the V/W type, as well as the radial type."

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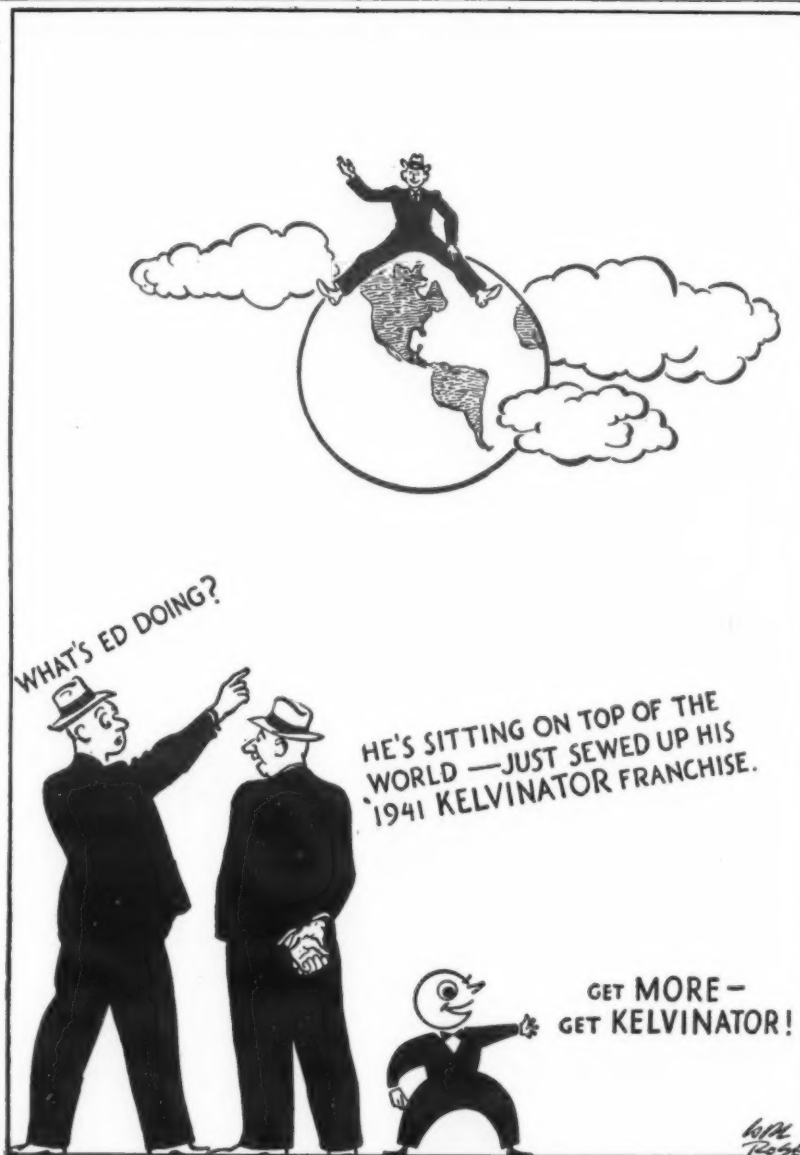
The Big, Colorful Convention Issue of the News

FOR READERS — Complete program of the All-Industry Refrigeration & Air Conditioning Exhibition, location of booths, schedule of meetings, and first word of the new products on the market for '41. An issue to read and keep for reference.

FOR ADVERTISERS — An opportunity to tell buyers what to look for in your booth, where to find you, what your plans are for helping them to obtain more business during the coming year. Important extra circulation at regular rates. Special color rates—write for details.

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GET MORE —
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Irving Alter's Camera Records Herman Goldberg's Party



(Left) Around one of the long tables provided for the guests are Mr. and Mrs. Fred Olds (who won

the jitterbug contest), Paul Krueger, Walter Lowitz, and Mrs. Paul Krueger, all of Chicago. (Right)

R. R. Dunlop, Ranco, Inc.; Mrs. Bloom, Mrs. Fuller, Mr. Bloom, and Mr. Fuller.



(Left) It was crowded even in the corners. Ivar Skipple, Jack Glass, Joe Coyne, Henry Valve Co.; Joe Coyne, Jr., (who has enlisted in the

navy), J. N. Ott, Henry Valve Co.; Al Fine, Kerotest Mfg. Co. (Right) This group, hosts at Refrigeration Maintenance Corp.'s big picnic in the

late summer, are guests at this party. Mrs. Al Weil, Mrs. Willard Prack, and Willard Prack and Al Weil of Refrigeration Maintenance Corp.



(Left) Some of the manufacturer's representatives present: Ed Scotten, Air Control Supply Co.; Ed Graff, Ranco, Inc.; T. C. McKee, Midwest Engineering Co.; John Bailey, Detroit Lubricator Co.; Lou Grauer, Detroit Lubricator Co. (Right) The host, Herman Goldberg, gives forth with a big grin as he poses with H. T. McDermott, national secretary, Refrigeration Service Engineers Society;

A. B. Schellenberg, president, Alco Valve Co.; and M. W. Knight, general

sales manager, Peerless of America, Inc., and all-industry show chairman.



There was standing room only when Herman Goldberg, manufacturer's agent for a number of refrigeration equipment and supplies firms, held his annual Christmas party in the North Ballroom of the Stevens hotel in Chicago. A crowd estimated at some 800 members of the trade and their wives were on hand to enjoy the entertainment provided and to take part in the fun.

800 Persons Attend Herman Goldberg's Christmas Party In Chicago

CHICAGO—More than 800 persons attended the Christmas party given by Herman Goldberg, manufacturer's representative, on Dec. 11 in the Stevens hotel here.

Grand attendance award went to Dan Kaulmeyer of Peerless of America, with other awards being made to Mrs. Irving Alter, J. D. Horon of Horon Refrigeration Co., E. Jones of Automatic Heating & Cooling Supply Co., and A. Cunningham of Liquid Carbonic Corp.

In the dancing contests, the waltz prize went to John Annis, Chicago Lipman distributor, and Mrs. Ben Rist, while the jitterbug contest was won by Mr. and Mrs. Fred Olds.

Frank B. Hamerly Dies

CHICAGO—Frank B. Hamerly, vice president of Independent Pneumatic Tool Co., died Nov. 27 of a heart attack while inspecting the company's plant at Los Angeles. Mr. Hamerly was 53 years old. He had lived in Aurora, Ill., where the company has a plant.

Durant, Okla. Dealer Builds New Quarters

DURANT, Okla.—Several years' study of plans for most efficient electric shop arrangement and operation preceded the construction of the new building erected here for the Hamilton Electric Shop, Frigidaire commercial refrigeration equipment dealer.

Roy Hamilton, who started his electric business in 1931, after seven years' experience with Oklahoma Gas & Electric Co., is proprietor. He designed plans for the new building, which combines display room, office, and work shop.



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MARSHALL, MICHIGAN

Refrigerated Bar for Draft and Bottled Beer

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ME RUN LIKE THE WIND TO GIVE UM SPEED UP SERVICE!

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Refrigeration and Air Conditioning Exhibition

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Jan. 13-16, 1941

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New Screw Catalog

CHICAGO — Central Screw Co. has issued a 115-page catalog illustrating and describing its complete line of screws, bolts, nuts, and rivets, and incorporating considerable technical information on these products and their use in various industrial applications.

Copies of the catalog are available from the company upon request.

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Ideal Beer Cooler Co.
2953 Easton Ave., St. Louis, Mo.

Hardy-MAYFLOWER
commercial compressors
are Efficient, Sturdy
and Reliable
Hardy Manufacturing Co., Inc.
126 Davis Ave., Dayton, Ohio.

Here's 'Oklahoma's Largest Locker Plant'

Nuway Frosted Foods Boasts Room For 5,000 Lockers

OKLAHOMA CITY, Okla.—More than 1,000 lockers rented, some 1,500 installed, and capacity for a total of 5,000—these figures afford some idea of the magnitude of the Nuway Frosted Foods establishment, known more familiarly hereabouts as "Pat Denham's locker plant."

Opened here last summer, this plant is part of a business enterprise which consists of a gas station, a laundry, a restaurant, and an ice house, in addition to the locker plant. All these units are operated at the same location, and all are under the same management.

Said to be the largest establishment of its kind in the state, the locker plant is complete in all respects, and has facilities for processing practically any kind of food. Frick refrigeration equipment is used throughout.

The 32 x 14 x 9 1/4-foot chill room is kept at 35° F. by a Frick 3775-AU air unit. Relative humidity in this room is maintained at 80%. Electric control valves in both the suction and liquid lines to the air unit close when the room is down to temperature, and the coils defrost automatically.

The quick-freezing room operates on an air blast system with double sets of Frick VW coils nested in the

bunker overhead. These coils are in 6-foot sections, and have lowered the room temperature to -60° F. in test runs. Temperature is normally carried at -30° F.

Locker rooms are insulated with 6 inches of Mundet corkboard. The smaller room is on the first floor and now contains 1,300 Knickerbocker lockers. A stairway leads from the sales room to an even larger locker room on the second floor. Cooling coils are of welded construction and are placed over the aisles of the rooms.

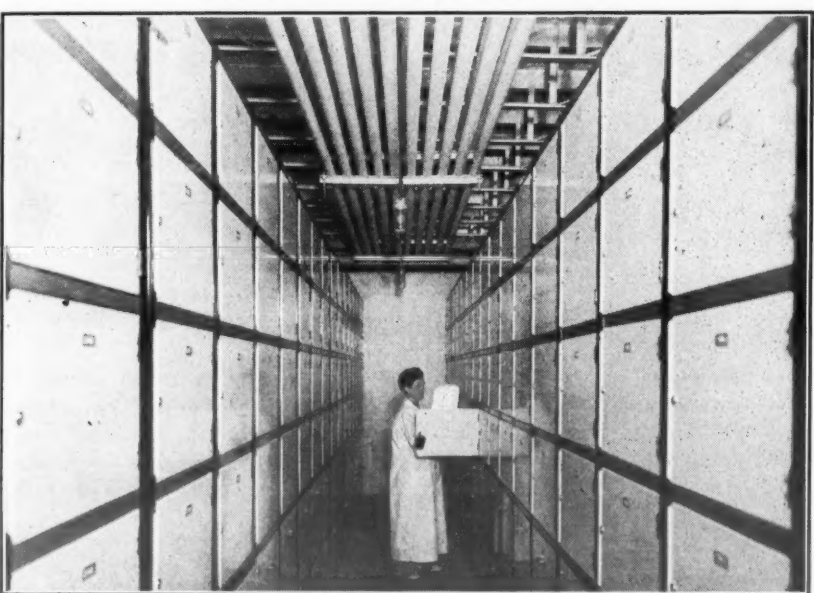
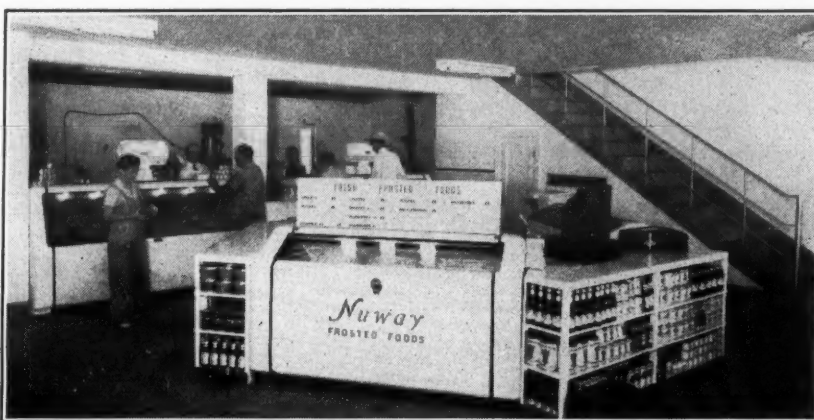
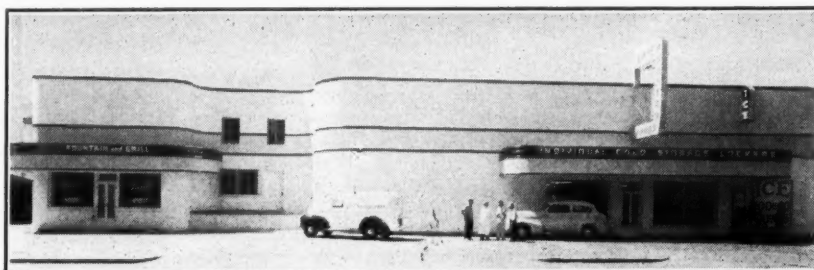
Refrigerating machines are driven by small motors drawing current from two generators which are direct-connected to Bruce-McBeth engines burning natural gas.

To keep from throwing heavy loads on and off these engines unnecessarily, and to provide adequately for the lockers which may be in-

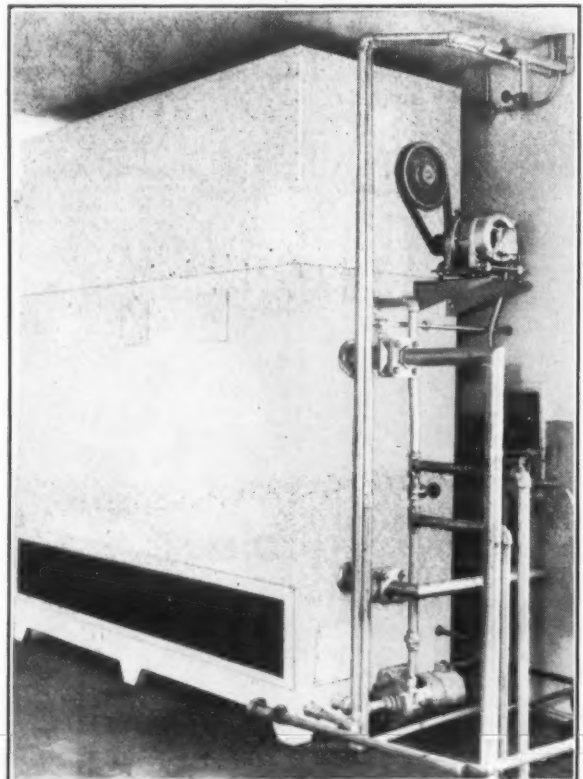
stalled in the plant in the future, four 5 x 5 Frick compressors, each driven by a 15-hp. motor, were selected for carrying the main load. A 7 1/2 x 5 booster machine is used for the low temperature work. This unit discharges through a gas and liquid cooler.

All machines are equipped with the patented Frick Flexo-Seal. Three 8 1/2-inch gauges are mounted on a gauge board of ebony asbestos. The Frick No. 12,003 evaporative condenser is located indoors on the second floor.

The entire plant is arranged for automatic control. Controls include five Minneapolis-Honeywell thermostats, a thermal expansion valve, three float controls with by-passes, seven electric control valves of various sizes, two pressurestats, and a high-pressure cutout. A purger saves both power and refrigerant.

'Pat Denham's Place'

From top to bottom these pictures show the modern white exterior of Pat Denham's Nuway Frosted Foods plant in Oklahoma City, the plant's reception room with its prominent frozen foods display case and the stairs leading to the second-floor locker room, one of the establishment's two locker rooms, and the Frick evaporative condenser (No. 12,003) which carries the plant's refrigeration load.

**Manheim Plant Installed By Kavanagh & Baizley**

MANHEIM, Pa.—Adding still another tally to the list of locker plants which it has installed, Kavanagh & Baizley of Philadelphia has completed a job for Manheim Ice Co.

Locker room of this plant is held at a temperature of 0° F. by use of three low-temperature Peerless diffusers. This room contains 150 Durabilt lockers.

Also included in the plant's facilities are a quick-freeze room that is kept at -20° F. by means of another low-temperature Peerless unit, a chill room, and a processing room. All the Peerless units are connected to a 7 1/2-hp. water-cooled Westinghouse compressor.

Kavanagh & Baizley has also handled the installation of equipment for the locker plants at Lancaster, Mount Joy, and Denver, Pa.

ALL COPPER PLATE COILS
Ideal for Counter Display, Salad Pans, Sharp Freezer Service, and Low Temperature Service.
KRAMER-TRENTON CO.
TRENTON, N. J.

SPORLAN
VALVES

For Information on Motors
FOR ALL TYPES OF
Air Conditioning and
Refrigeration Equipment
WRITE TO
Wagner Electric Corporation
6441 PLYMOUTH AVE. ST. LOUIS, MO.

COMMERCIAL REFRIGERATORS
World's most complete line of commercial cabinets—13 to 84 cu. ft. capacity.
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MFG. COMPANY • GALESBURG, ILL.

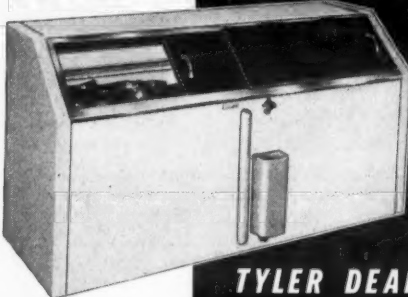
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Give Extra Profits—
Certain Repeat
Business—
Send Today for
All the Facts
ALL-STEEL-EQUIP. COMPANY, INC.
184 Kensington Avenue • Aurora, Illinois

ALCO Specify ALCO
Engineered
Refrigerant Controls for
Maximum Performance
ALCO VALVE CO. ST. LOUIS, MO.

Use CHICAGO SEALS
for seal replacements
A complete line in all sizes
CHICAGO SEAL CO.
20 North Wacker Dr., Chicago

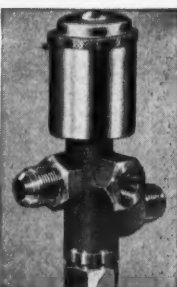
LET US SOLVE YOUR
COIL PROBLEMS
MARLO COIL COMPANY
SAINT LOUIS, MISSOURI

Anaconda Copper
Refrigeration Tubes
Unusually long
lengths!
THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices: Waterbury, Conn.

INVESTIGATE NEW TYLER DRY-KOLD BEVERAGE COOLER

★ SALES POSSIBILITIES exist everywhere, right now, for this better, more sanitary DRY bottle cooler. The complete Tyler line for 1941 is just as up-to-the-minute and salable—with Sectional Steel Clad Walk-In Coolers, Welded Steel Reach-In Boxes and Display Cases to meet every possible need. Write TYLER FUTURE CORPORATION, DEPT. R-1, NILES, MICHIGAN, today!

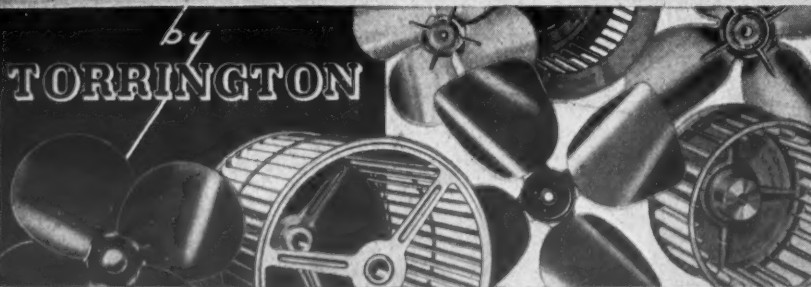
TYLER DEALERS ARE MAKING MONEY!

**AMINCO No. 881 Constant Pressure Valve**

A two temperature automatic valve, with built-in check. Ideal for controlling the warmer coils in multiple systems. Shuts off tight. The two-temperature valve keeps walk-in boxes at constant temperature avoiding low pull-down. Adjustable between 20 in. vacuum and 40 lb. pressure. Maintain coil pressure within a 2 lb. differential.

AMERICAN INJECTOR CO.

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Export: Borg-Warner International Corp., 310 S. Michigan Ave., Chicago, Ill.

Fan Blades and Blower Wheels

THE TORRINGTON MANUFACTURING CO. of TORRINGTON, CONNECTICUT

THE DAIRY CASE THAT TOPS THEM ALL

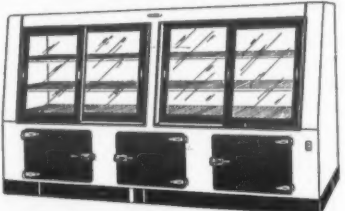
"EYE LEVEL" DISPLAY BOOSTS SALES.
PERFECT REFRIGERATION ENDS
SPOILAGE.

ALSO AVAILABLE WITH NON-REFRIGERATED OPEN BOTTOM, WITH WIRE BASKETS.

IDEAL FOR DAIRY, PRODUCE, AND ALL OTHER PERISHABLES.

A BIG DEMAND FOR THIS ITEM.
A REAL PROFIT FOR YOU IN EVERY SALE.

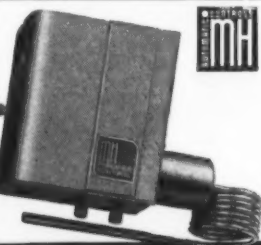
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MODEL 6000

FOGEL REFRIGERATOR COMPANY Since 1899
16th & Vine Sts., Phila., Pa.

Only POLARTRON
Offers Truly Independent Adjustment



This exclusive
MINNEAPOLIS-HONEYWELL
feature enables you to change
either the ON or OFF pressure
without affecting the other

MINNEAPOLIS-HONEYWELL
MINNEAPOLIS-HONEYWELL REFRIGERATION COMPANY
1907 FOURTH AVENUE SOUTH, MINNEAPOLIS, MINN.
CANADA PLANT: TORONTO, CANADA PLANT: LONDON, ENGLAND (SOLE IMPORTERS IN AUSTRALIA)

Operating and Service Methods For Dry Expansion Counter-Freezers

By Arch Black and Dean C. Seitz

Editor's Note: This is one of a series of articles on the servicing of counter-type ice cream freezers, which have been appearing in the issues of AIR CONDITIONING & REFRIGERATION NEWS in the past few months. It will form one section of a general series on the servicing of low temperature equipment.

Fig. 15 illustrates the hook-up for the combination freezer and hardening cabinet with the compressor installed in a remote location. In this type of installation it is to be noted that an automatic expansion valve is required for the freezer and a thermostatic expansion valve is necessary to control the flow of

refrigerant to the cabinet. These expansion valves may be located in the mix compartment or in the basement under the cabinet.

From Fig. 15, in addition to the pressure control above mentioned, a temperature control is necessary which should be hooked up in parallel with the pressure switch to start the compressor when the freezer hand valve is open. When the hand valve is closed the pressure switch will remain open and the temperature switch will control temperature in the cabinet.

Note: These two switches are combined into one switch on the self-contained models. See details later.

For the thermostatic expansion valve bulb and the bulb of the temperature control a $\frac{1}{16}$ inch socket is provided for each bulb in the hardening space. This socket is approximately 20 inches deep and the bulbs must be placed as far back in their respective sockets as they will go to secure proper valve performance and temperature results. Table 4 outlines the freezer automatic expansion valve settings.

In some cases where the pressure control has been used without a temperature control it will be necessary that the pressure control be set to open the circuit at 14 inches of vacuum and close at 0 pressure when methyl chloride is the refrigerant, and when "Freon-12" is used

the setting should be approximately 5 inches of vacuum cutout and approximately 4 pounds cutin.

If a pressure control only is used, the thermostatic expansion valve is of course necessary on the cabinet and an automatic expansion valve on the freezer. With the control set as mentioned the compressor would automatically start at the cutin point when the hand valve on the freezer is opened.

The thermostatic expansion valve will need little or no adjustment from the factory setting, and will result in -12° F. average cabinet temperature. With the freezer's automatic expansion valve adjusted to the pressure as shown in Table 4 and the pressure control as mentioned above, no frost will be found on the suction line outside the mix compartment.

Woodward Iron Co. To Condition 3rd Furnace

WOODWARD, Ala.—As a result of increased output and lowered production costs arising from the installation of air conditioning in two blast furnaces, Woodward Iron Co. has placed a contract for air conditioning its third furnace.

H. A. Berg, Woodward president, stated that air conditioning has increased pig iron output of the two furnaces by 10%, while coke requirements of the furnaces have been reduced by approximately 200 pounds per ton of pig iron.

Shook & Fletcher Supply Co., Birmingham distributor for Carrier, will handle the job, installing a centrifugal machine.

established reputation, desires representatives to contact general trade. Protected territories. For further information write Box 1282 advising territory desired.

FRANCHISES AVAILABLE

SEND FOR PRICES and literature on the General 1940 all streamlined refrigerator display case line. Over 40 years experience manufacturing good commercial refrigerators. On a comparative price test with other makes of equal specifications, prices are lowest in the country. GENERAL REFRIGERATOR & STORE FIXTURE CO., 5th & Bainbridge Sts., Philadelphia, Pa.

BUSINESS OPPORTUNITIES

COMMERCIAL Refrigerator manufacturing business, old, established, in large eastern city. manufacturing reach-in refrigerators, walk-in coolers, double and single-duty cases, and special-built refrigerators for all purposes, now in operation, will sell reasonable, or consider a partner, must be first class salesman with some investment, excellent opportunity for right man, further information. Box 1280, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

28 TON Brunswick 4 cylinder Ammonia Compressor, 40 H.P. Wagner motor and accessories; 1-Burgess Iron Removal Plant with tank, brim and back washing equipment; both excellent condition. FREDERICK G. SMITH & CO., 327 E. Stephenson St., Freeport, Ill.

COIN METERS for sale—Limited quantity of NEW Metromatic Coin Meters, No. M-11, 110 Volt, 60 cycle, $\frac{1}{2}$ H.P. for sale at reduced price. \$3.50 each. Write or wire us direct. Orders filled as received and only as long as stock on hand. WEBER SHOWCASE & FIXTURE CO., INC., 5700 Avalon Blvd., Los Angeles, California.

REPAIR SERVICE

CONTROL REPAIR service. Your controls repaired by expert mechanics, with

special precision equipment. Supervised by graduate engineers. We stress perfection and dependability before price. One year guarantee on domestic controls. Any bellows operated device repaired. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

HERMETIC REBUILDING and Exchange Service General Electric—Westinghouse—Majestic and Grunow Units, Compressors and parts. Immediate shipment. Old unit can be returned later in our crate. We also exchange floats, Evaporators, Controls. Write for price list specify S6. SERVICE PARTS CO., 1101-03 N. 24th Ave., Melrose Park, Ill.

CONTROL REPAIR Service. Domestic controls reconditioned equal to new at a small cost. All work guaranteed for one year. Prices upon request. UNITED SPEEDOMETER REPAIR CO., INC., 342 West 70th Street, New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Commercial Condensing Units

All New Air Cooled Condensing Units Complete with Nationally known compressor, Delco motor, controls, etc. $\frac{1}{2}$ H.P.—\$48.00, $\frac{1}{4}$ H.P.—\$78.00, $\frac{1}{2}$ H.P.—\$90.00, 1 H.P.—\$110.00. All New Water Cooled Condensing Units Complete with Nationally known compressor, Delco motor, H & L Pressure control and Water Valve. $\frac{1}{2}$ H.P.—\$86.00, $\frac{1}{4}$ H.P.—\$100.00, 1 H.P.—\$120.00. Wagner motors optional. We guarantee complete satisfaction or your money back.

Refrigeration Supply Jobbers
2521 N. PULASKI ROAD
CHICAGO, ILLINOIS

GALE
COMPRESSORS
Single and twin cylinder units. Engineered and manufactured to highest standards. Write
GALE PRODUCTS
1635 Monmouth, Galesburg, Ill.

Dealers Wanted for
Midwestern and Southern States
CAMPBELL REFRIGERATOR CO.
Milwaukee, Wis.

USE McQUAY COILS
WITH THE HIGH CONDUCTIVITY
"FRICTION-GRIP" BOND
McQuay Inc.
MINNEAPOLIS, MINN.

HEADING
FOR PRODUCTION
AND PROFITS
Rotary Seal Units
Rotary Seal Co., Chicago, Ill.

KEROTEST
Valves and Fittings
The Standard of the
Industry
Kerotest Manufacturing Co.
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Fulco quilt-edge
ADJUSTABLE
REFRIGERATOR
COVERS
Fit any refrigerator.
Reduce loss from damage in transit to a minimum.
Write today for prices
FULTON BAG & COTTON MILLS
Manufacturers since 1870
Atlanta, New York, Kansas City, Kan.,
Minneapolis, New Orleans, St. Louis.

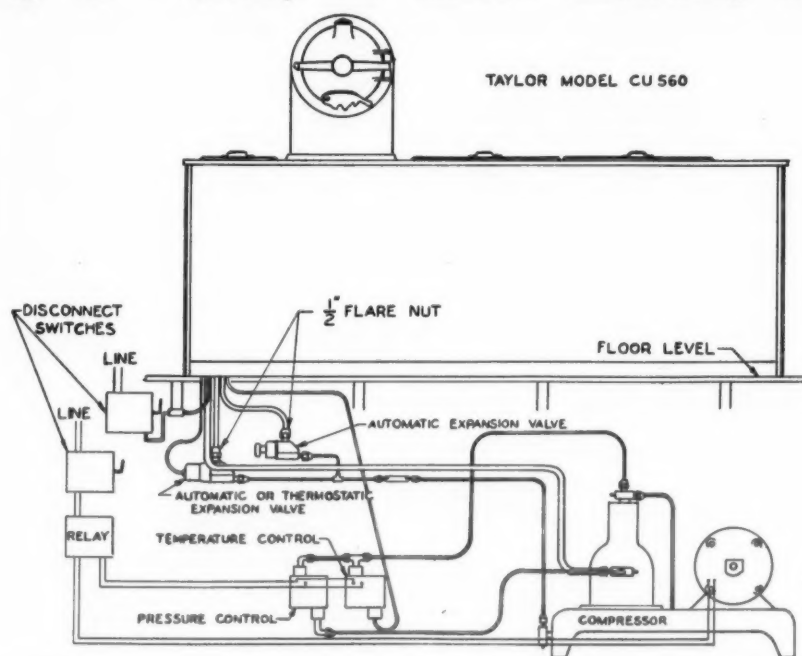
MILLS MIGHTY REFRIGERATION
Mills Condensing Units
By Mills Novelty Company
4100 Fullerton Ave., Chicago, Ill.

Table 4—Automatic Expansion Valve Settings

2½ and 5-Gallon Freezers

Freezer Size	Unit Size	Refrigerant	Expansion Valve Setting
2½ gal.	1 hp.	methyl chloride	6 lbs.
2½ gal.	1 hp.	"Freon"	5 lbs.
2½ gal.	1½ hp.	methyl chloride	4 lbs.
2½ gal.	1½ hp.	"Freon"	5 lbs.
5 gal.	1½ hp.	methyl chloride	8 lbs.
5 gal.	1½ hp.	"Freon"	14 lbs.
5 gal.	2 hp.	methyl chloride	5 lbs.
5 gal.	2 hp.	"Freon"	10.5 lbs.

Fig. 15—Hookup For Remote Condensing Units



Harry Alter Establishes Philadelphia Branch

PHILADELPHIA — The Harry Alter Co., refrigeration and air conditioning supplies jobber, has opened a branch here at 1407 West Montgomery Ave., stocking a complete assortment of parts, supplies, and tools.

The branch will be under the supervision of Leo Alter, who is in charge of Alter's eastern division, and the Philadelphia store will be directed by Louis Messina, as branch manager. This is the ninth branch to be opened by the company.

Hamilton-Cook Opens Appliance Department

WAYNESBORO, Pa.—A complete electrical appliance department is an outstanding feature of the new store of Hamilton-Cook Hardware Co., local General Electric dealer.

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words, four cents each. Three consecutive insertions, \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

WANTED: Salesmen to represent distributors selling nationally known electric refrigeration equipment. Territories open are Carolinas, Virginia, Georgia, Kentucky, Alabama, Mississippi, Louisiana, Florida, Tennessee, Texas, Arizona, California, and Cuba. This is an opportunity for men who are large earners and producers. When writing, state complete details as to qualifications. Write Box 1281, Air Conditioning & Refrigeration News.

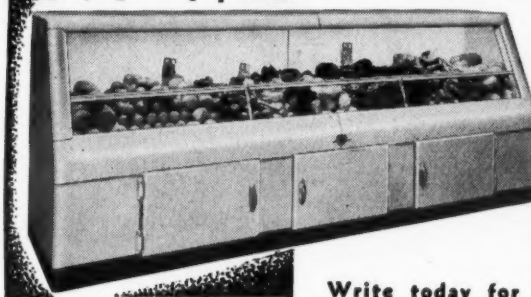
MANUFACTURERS AGENTS WANTED

A LARGE manufacturer of refrigeration condensers, coils, and related items, with



OPEN
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The Crispeteria is open OPEN for compelling, attention-getting display of produce. OPEN for customers loaded down with purchases, who can't open bulky doors OPEN for easy handling and selection... OPEN FOR BUSINESS! OPEN so that grocers are eager to install one. OPEN a new field for profits by selling the Crispeteria.



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REFRIGERATORS

NORTH KANSAS CITY, MO.

Write today for details and open territories.

BALANCED-ACTION

RECOMMENDED

for Easier Operation

Balanced-Action equalizes pressures on both sides of the valve seat at the instant of opening. Equalization takes place through a balancing channel located in the valve stem. This exclusive Henry feature assures that the valve will always open positively and close easily.

HENRY BALANCED-ACTION DIAPHRAGM PACKLESS VALVES

HENRY VALVE COMPANY
1001-19 N. PAULDING AVE., CHICAGO, ILL.
AND SOLD BY LEADING JOBBERS

★ ★ WEBER SODA FOUNTAINS ★ ★

There's A Longer Profit
In WEBER Equipment!

A line of fountains making real money for aggressive distributors. Nineteen models. All priced exceptionally low. Weber fountain distributorships available. Write today for complete information. Cash in on America's fastest selling line.



Distributorships also available for refrigerator display cases and reach-in cabinets.

WEBER SHOWCASE AND FIXTURE COMPANY, INC.
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QUICK SERVICE
Complete
stocks of REFRIGERATION and
AIR CONDITIONING SUPPLIES
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LOW PRICES

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1728 S. MICHIGAN AVE., CHICAGO, ILL.
3 Chicago Branches, North, West, South

NEW YORK
PHILADELPHIA
BRONX
JAMAICA

NEWARK
DETROIT
CLEVELAND
ST. LOUIS

Arriving at Kelvinator Convention



Still a little dazed from their long train ride seem D. C. Sperry and M. Stanton, Oklahoma Tire & Supply Co., as they line up to get their Kelvinator convention paraphernalia at Detroit's Book-Cadillac hotel.



A. A. Schneiderhahn (left) the veteran Des Moines distributor, waits patiently in line to register as M. Sandeten and E. G. Sandeten of Tulsa, Okla. discuss their conference plans while awaiting a badge.



From the blustery west into blustery Detroit come J. N. Crossway (left) of Denver and B. L. Lemp, Boise, Idaho.

Brabham With Distributor

CHARLESTON, S. C.—Lyn Brabham, for the past two years sales manager of Electric Sales & Supply Co., General Electric dealer in Florence, S. C., has joined Fort Sumter Electric Co. here as jobber representative.

U. S. GOVERNMENT Specification

Filtrine

Cafeteria Coolers
Filtrine Mfg. Co., Brooklyn

EVERY DAY IS TAG DAY AT ANSUL



Ansul analyzes, and tags that analysis on, every Ansul cylinder every day. When you specify Ansul refrigerants you specify known, proved quality without exception.

ANSUL SULPHUR DIOXIDE METHYL CHLORIDE

ANSUL CHEMICAL COMPANY • MARINETTE, WISCONSIN

AGENTS FOR KINETIC'S "FREON-12"



These boys—A. A. Jackson, J. Harding, and K. C. Mulkey—sharpen up their eyes by inspecting everything at the registration desk carefully. Later they'll look sharply at the new line.



Part of the eastern delegation. Wm. G. Miller, H. M. Tower Co., New Haven, Conn.; S. Rosenblum, Newburgh, N. Y.; and Harold Gabrilove, Shapero Distributing Co.

'Dealers Can Sell Room Coolers,' Danley Says

(Concluded from Page 1, Column 4) ing products, including package type store cooling units and built-up air conditioning systems, are being sold through selected air conditioning firms.

Questioned about the possibility of putting a nationally advertised price on all lines of 3, 5, 7½, and 10-ton store cooling units, allowing the dealer a 35% gross profit in the price, Mr. Danley did not feel such a plan would be workable.

"Too much installation is involved in this kind of a job," he said. "Distributors would feel that the public was being misled if a 5-ton store unit was quoted in national advertising at say \$995, plus installation. By the time the customer got the unit installed it might cost \$1,250 or \$1,500—and the distributor would be in a tough spot with his customer."

Missouri Sales Tax Ruling Affects Air Conditioning

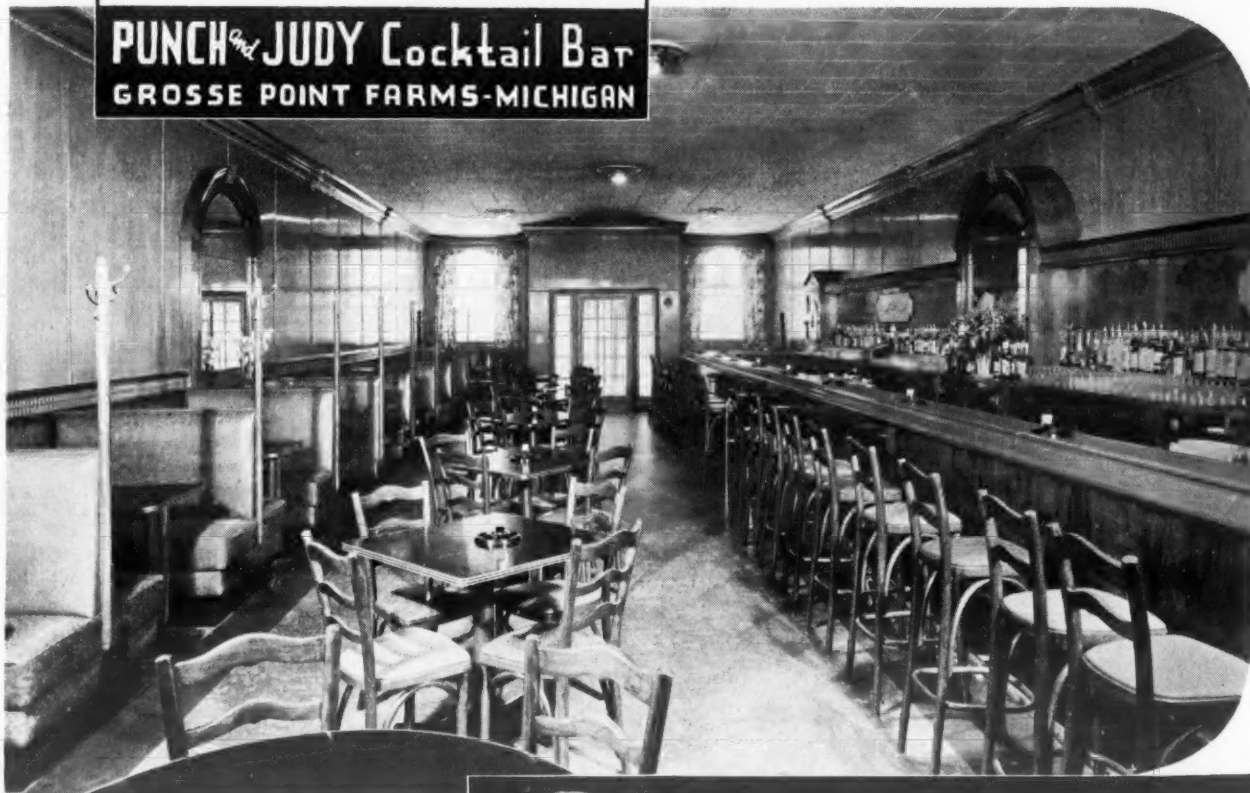
(Concluded from Page 1, Column 5) that if an out-of-state corporation secures an air conditioning or heating contract in Missouri, the tax will apply to all merchandise shipped into the state in fulfillment of the contract.

It was stipulated, however, that the tax would apply to material cost only, and will not be applied to labor, installation work, or service.

VALVES Serve the "Nation's Most Exclusive Residential Section . . ."
(*"Life"*—October, 1939)

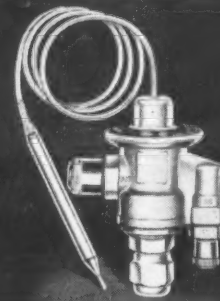
Attend the Third All Industry Refrigeration and Air Conditioning Exhibition—January 13-16, Stevens Hotel—A-P Booth No. 128-129.

PUNCH and JUDY Cocktail Bar
GROSSE POINT FARMS-MICHIGAN



Where people of "Discrimination" gather for relaxation and refreshment, refrigeration must be **DEPENDABLE!** And so it is—at the large and beautiful PUNCH and JUDY Bar, in the exclusive Village of Grosse Point Farms, Michigan.

In the new cooling system recently installed here by the A. Claus Company of Cleveland, seven A-P No. 207 Thermostatic Expansion Valves are performing with their customary Dependability . . . Offering the last word in Refrigerant Control accuracy that makes the installation completely satisfactory to the Owner—and profitable for the Service Engineer.



Model 207
Thermostatic Expansion Valve

Used in the PUNCH and JUDY Bar, and in thousands of Cooling Systems throughout the country. Offers the advantages of small body size, large capacity, close accurate control, supersensitivity, easy superheat adjustment, and many other typical A-P features that make it a valuable unit on any installation.

A-P Valves add **DEPENDABILITY** to Refrigeration and Air Conditioning everywhere. To thousands of Engineers, this **DEPENDABILITY** in refrigerant control is so important that the thought of a substitute is impossible.

A-P **DEPENDABILITY** is worth money—to YOU, too! Cuts your service expense on new installations as well as on replacements—helps you build a longer list of satisfied customers—to increase your business. If you haven't already proved this in YOUR experience, start using A-P Valves NOW!

AUTOMATIC PRODUCTS COMPANY

2450 NORTH THIRTY—SECOND STREET
MILWAUKEE WISCONSIN

Export Department 100 Varick Street, New York City

★ Progressive Service Engineers Use and Recommend—and Aggressive Jobbers Stock and Talk—A-P Products.